NEW REMEDIES.

AN ILLUSTRATED MONTHLY TRADE JOURNAL OF

MATERIA MEDICA, PHARMACY, AND THERAPEUTICS

VOL. XI., NO. 8. WHOLE NO. 98.

FRED'K A. CASTLE, M.D., - - EDITOR.
CHARLES RICE, PH.D., - ASSOCIATE EDITOR.

PUBLISHED BY

WILLIAM WOOD & CO., 56 & 58 Lafayette Place, N. Y

AUGUST, 1882.

SUBSCRIPTION PRICE, per year, - - - - - $2.00
SINGLE COPIES, - - - - - - - - - - .20

Address all communications relating to the **business** of NEW REMEDIES, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & CO., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the **Editor** should be addressed to THE EDITOR OF NEW REMEDIES, in care of William Wood & Co., 56 and 58 Lafayette Place, New York City.

NEW REMEDIES is issued the 25th of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location and time. Special rates on application.

ELECTROTYPES of the illustrations contained in NEW REMEDIES will be furnished for 50c. per square inch.

EDITORIAL.

Rebate Sales.

WHATEVER the feeling of jobbers in proprietary articles may be respecting the advisability of adopting a special mode of doing business with these goods, retail dealers do not appear to favor the project. We have received during the past month the names of many hundred pharmacists in Western and Southern States who object to the rebate plan and urge a return to former business customs. Thus far the project seems to have originated with the jobbing trade a means for their own protection, and the first important result has been a rise in the price charged by the manufacturers to cover the rebate.

There is another view of the question which we have not seen commented upon and which may considerably affect the success of the scheme; viz.: as we understand the rebate plan, it only binds the dealer who agrees to its provisions, but does not bind the manufacturer. In other words, if the jobber who signs a rebate contract sells the goods for less than the established price, he fails to get the rebate on *all* his sales. There is, however, no recourse for him against the manufacturer who sells for less than the list price to a jobber who declines to adopt the rebate plan or to a retail dealer who is able to purchase in large quantities of first hands. Much of the underselling, in proprietary articles, has been done, in cities, by the large fancy-goods houses or the so-called "bazars," where the low prices at which goods are sold are only possible when the lowest rates are obtained in purchasing, and where large sales justify a small profit on the single article. In order to make the rebate plan successful, its originators will be obliged to invent some method which will prevent the manufacturers from underselling their own established prices, or else the jobbers who adopt the rebate system will more than ever suffer from competition on the part of those who can buy and sell cheaper than they.

Pharmaceutical Meetings.

THE season for Pharmaceutical Conventions culminates with the meeting of the National Association at Niagara Falls in September, and there is every promise that the occasion will be one of the notable events in the history of pharmacy in this country.

Much activity has lately been shown in the organization of State and local societies, and in the enactment of laws regulating the practice of pharmacy, and the result of such organization is very likely to be shown in the attendance at the meetings of the central association and in the nature of the business transacted. It may require some effort on the part of those chiefly interested in the welfare of the American Pharmaceutical Association to prevent the time devoted to its meetings being too largely monopolized, in the future, by mere association business at the expense of scientific matters; and in securing a sufficient supply of valuable papers on scientific subjects to render the meetings attractive and profitable. The organization of so many local societies will tend to lessen the number of papers offered at the meetings of the national society, unless care is taken to give a reasonable amount of attention to *all* that may hereafter be presented. The labors of a well organized committee may prevent much waste of time by the adoption of a settled order of business, but it is well known that some of the most interesting features of a meeting are such matters as come more or less spontaneously before it and are not provided for in the committee's schedule.

Patent Medicines in France and Belgium

THE *Chemists' Journal* gives an account of a movement in France and Belgium to limit the general sale of proprietary medicines, which is already interfering to a considerable extent with the profits of qualified physicians. The *Journal* says: "The agitation has been set on foot by the Association Générale des Médicins de France, who have influenced their brethren who form part of the local committees of inspection. The Secretary of the Association Médicale, Dr. Martineau, in the last annual report, appeals to his colleagues, who belong to these inspection committees, to warn all pharmacists in their districts that they will treat as secret remedies, forbidden to be sold by law, every specialty, whosoever may be the inventor or proprietor, that is advertised in any way, even by show cards and labels, as being sold by any of the pharmacists within their jurisdiction; the sale of medicaments recommended for particular diseases being considered as coming under the head of the illegal practice of medicine. In Belgium, several prosecutions of pharmacists for this supposed offence have taken place and failed, but in France, the action of the medical men has as yet only extended to warnings.

"The editor of the *Répertoire de Pharmacie* protests energetically against these measures, and reminds the inspectors that their duties are simply confined to seeing that all medicaments are of good quality and properly prepared, and to report cases of the illegal practice of pharmacy, but not of medicine, which belongs to the executive."

Correction.

A CORRESPONDENT has kindly called our attention to an erroneous statement made in our last issue, respecting the *un*officinal character of lactic acid. The mistake had already been recognized after the Journal had gone to press and can only be explained on the ground of its having been a failure of memory due to inattention and excessively hot weather.

[Original Communication.]

The Physiological Action of Astragalus Mollissimus, One of the "Loco" or Crazy Weeds of the West.

BY ISAAC OTT, M.D.

The Agricultural Department at Washington has been endeavoring to ascertain what plants have caused destruction among the horses and cattle in the West. Those usually designated by observers have been the *Oxytropis Lamberti*, *Astragalus mollissimus*, and *Sophoria sericea*. The latter has been proved to be poisonous, and I propose to show in this paper that *Astragalus mollissimus* also is. The animals usually eat these plants at the time when grass is not abundant; and when they have tasted of it, they leave the sweetest grasses in order to eat "loco" weeds. When the animals have eaten these weeds, they first begin to lose flesh; have general lassitude, impaired vision; become vicious and unmanageable, with loss of strength. In approaching small objects, they leap into the air, and horses have frequently died during these paroxysms from falling backward. The time required for these weeds to prove fatal varies from three to four days; whilst others linger a year or more. Horses are more affected than cattle or sheep. Other observers state that no differences exist. It is held by some that the animal suffers not so much from direct poisoning as from the lack of nutritive materials, as food and water.

Drs. F. Eckert, Mosher, and Hudnutt, of Kinsley, Kansas, report the symptoms as follows: "The plant is found growing in an isolated condition, seldom growing profusely enough in one place to be observable; poor, clayey, upland soil seems to favor its spread. It is a perennial, keeping its green foliage in winter, and from this reason obnoxious, because enticing the animal to crop only the green verdure which is to be found among the short, tawny buffalo grass in winter. When once partaken of, the mischief seems to be started by imparting an exhilarating, intoxicating effect, which will tempt the animal to partake anew, and in a short time it will have such a craving for the plant that it will desert its grazing grounds and wander around in search of the plant, subsisting alone on it apparently, and resisting the cravings of thirst for some days; sometimes will madly plunge into the water to drink when it does reach it. A horse will never contract the habit in summer time when on green grass, even if the "loco" grows plentifully. The full effects upon the system of the horse are as follows:—

1. A small amount of exercise will produce profuse sweating.

2. The animal, when 'shying' at an object, is very liable to rear up and fall backwards.

3. A stroke or sometimes even a touch about the head seems to rouse the disorder, which is immediately manifested by struggles and general frenzy.

4. While being ridden, when that is possible, the animal steps very high, as though walking over obstacles, and the slightest thing in the road, as a stick, piece of rope, or wagon-rut, will be magnified into an apparently insurmountable difficulty, and it is ludicrous to see the animal jump, as if leaping over a ditch, to get over them.

5. The animal seems to lose all power of reasoning or of co-ordination; will walk into a ditch or bank instead of around it; will walk sometimes backward when apparently trying to get forward.

The animal sometimes stands with head lowered, seemingly asleep or indifferent to its surroundings.

Cattle are similarly affected, but it is seldom that one acquires the habit of eating the plant."

Through the kindness of Dr. F. Eckert, of Kinsley, Kansas, I was supplied with this plant; in fact, except for his liberal spirit and energy in supplying me with material, no experiments could have been made.

I wish also to state that the botanical determination of this plant was made by the distinguished botanist, Prof. T. C. Porter, of La Fayette College, to whom I wish to express my best thanks.

The infusion used in these experiments was made as follows:—

The plant was placed in 80 per cent alcohol. This solution was evaporated to a soft-solid consistence, and this residue treated with water containing a little acetic acid; filtered; the acidulated filtrate evaporated so that each ounce of the infusion corresponds to an ounce of the plant.

This method was suggested by Mr. H. B. Parsons, of the Department of Agriculture. In this paper I propose to give only a preliminary report of results reached so far. The plant is now being worked up by a very able chemist, who will furnish me with the active principle, when I hope to make more experiments on this subject. The syringe employed in the experiments was the ordinary one for hypodermic use.

General Action.

Experiment 1.—Frog received at 3.40 P.M. two syringefuls of infus. *Astrag. moll.* subcutaneously; 4 P.M., inability to hop about, pupils dilated, want of voluntary power in the extremities, some diminution of sensibility; 5.10 P.M., pupil less dilated, general condition slightly better; 8.5 P.M., voluntary motion impaired, sensibility better, can move when pinched; next morning at 8.30 A.M., pupil still dilated, can hop about feebly, tetanus present. Recovered during the day.

Experiment 2.—Frog received subcutaneously three syringefuls of infus. of *Astrag.* at 5.22 P.M. 5.37 P.M., loss of voluntary power, pupil dilated, want of feeling, tetanus present. 6.13 P.M., complete loss of sensation and motion. 7 P.M., dead; heart-beat fourteen per minute, and very feeble; motor nerves slightly irritable.

Experiment 3.—Rabbit received at 1.20 P.M. eight cubic centimetres of infus. *Astrag.* subcutaneously: sits still, pupil dilated. 1.30 P.M., lies on his belly, with feet under him; often changes the position of his feet. 1.38 P.M., frequent respiration. 5 P.M., same condition. 5.20 P.M., four cubic centimeters of infus. *Astrag.* by the jugular; arrest of respiration; heart feeble; ventricle beats occasionally; auricle beating more frequently—death.

Experiment 5.—Cat received subcutaneously about four cubic centimetres of infus. *Astrag.* at 1 P.M.; moves about; pupils dilated; inco-ordination, especially of the muscles of the neck; falls to one side on moving about; vomits. At 1.15 P.M., circular movement to the left of the whole body; sinks down on the anterior extremities at times. 1.17 P.M., difficult jerking inspiration; heart-beat irregular, weak, and slow; seems in a stupor; strong pinching of the tail has no effect in arousing the animal. 1.18 P.M., saliva flowing. 1.40 P.M., totters about; fetching, labored respiration; heart very feeble; pupils contracted, due to excess of carbonic anhydride in the blood. 2 P.M., respiratory pauses: Cheyne-Stokes variety; cannot stand on feet; heart-beat 120 per minute, irregular; animal cannot see on account of want of perceptive power. After this period the animal began to gradually recover till 7 P.M.; totters when walking; pupils dilated; strong pinching of the ears is without any effect. Next day, nearly recovered; pupils remained dilated for some days.

This plant, when it kills, does so mainly by an action on the heart. In cold-blooded animals, it produces loss of voluntary motor power, diminution of sensibility, want of co-ordination, dilatation of the pupils, and, in some cases, tetanus. If the drug is pushed, the heart is also arrested. In warm-blooded animals, it causes impairment of voluntary motor power; complete loss of sensibility; want of co-ordination; salivation; dilatation of the pupil; labored respiration, and cardiac arrest. It also causes circular movements, and occasionally a disposition in cats to walk backward. It produces a stupor, and, in large doses, a want of ability to see objects, due partly to the dilated pupil and partly to the want of response in the brain itself. This state of affairs explains the similar movements in horses of moving backward and "shying" at objects, for here the dilated pupil prevents them from seeing near objects distinctly, and the action of the drug on the brain assists in producing this state of affairs.

Action on the Motor Nerves.

EXPERIMENT 6.—Frog received at 11.30 A.M., two syringefuls of the infus. Astrag. subcutaneously; 11.40 A.M., loss of voluntary power over the anterior extremities; 11.45 A.M., loss of voluntary power over all the extremities; 12 M.; tetanus present, limbs extended; 12.10 P M., muscular twitchings, sensibility to pinching greatly reduced; 12.55 P.M., another syringeful introduced subcutaneously; 2 52 P M., death; motor nerves irritable at one hundred and sixty millimetres of Du Bois' coil; heart-beat, eight per minute.

This experiment demonstrates that it does not paralyze the irritability of the motor nerves, but reduces it to a certain extent.

Sensory Nerves.

EXPERIMENT 7.—Frog had his right posterior extremity ligatured, excepting the sciatic nerve; received subcutaneously four syringefuls of infus Astrag. at 1.20 P.M.; paralyzed considerably in voluntary power; considerable want of sensibility at 3.30 P.M., in both posterior extremities.

EXPERIMENT 8.—Frog at 12 35 P.M. his right leg ligatured except the sciatic, receiving subcutaneously three syringefuls of infus. Astrag.; 12.48 P.M., unable to move, lies with limbs extended. Upon pinching tetanus ensues; 1.0 P.M. no difference in sensibility in both post. extremities. The sensibility is diminished 3 P.M.; throwing him on his back causes movement; pinching produces no movement, but the application of sulphuric acid to feet does; death during the evening, found so at 9 P.M.; sciatic of ligatured leg irritable at one hundred millimetres Du Bois' coil, the sciatic of poisoned side irritable at zero; heart beating ten per minute.

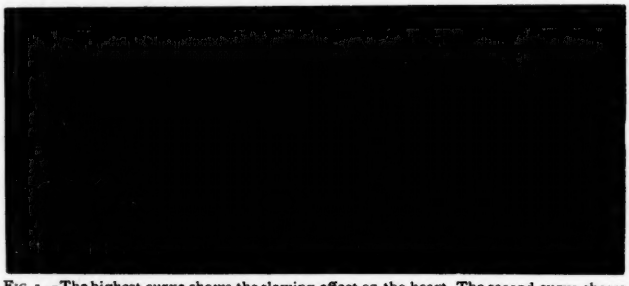


FIG. 1.—The highest curve shows the slowing effect on the heart. The second curve shows the delirium cordis. The lowest line is the second line.

EXPERIMENT 9.—Frog, abdominal aorta and viscera in front of it ligatured, a syringeful of infus. Astrag. subcutaneously under the skin of the lower jaw, at 7.25 P.M. 7.50 P.M., the diminution of sensibility in both posterior extremities is equal to that in the anterior; tetanus present. 8 P.M., complete loss of sensation and voluntary motion, heart beating very slowly and feebly.

All these experiments prove that the loss of sensibility is not in the termination of the sensory nerves, but in the central sensory ganglia.

Action on the Spinal Cord.

EXPERIMENT 10.—Frog received on a previous day two syringefuls of the infus Astrag.; next day tetanus was present, section of cord at its upper end. The tetanus was still present, showing that the tetanic action is spinal in its origin.

Action on the Circulation.

In these experiments I used rabbits. The carotid was attached to Ludwig's kymographion The drug was injected into the circulation through the jugular.

EXPERIMENT 11.—Rabbit.

Time.	Pulse.	Pressure.
1. 0.0 P.M.	75	93
1. 2.15 "	69 (4 *cc.* infus. Astrag.)	98
1. 2.30 "	66	106
1. 3.0 P.M.	65 (4 *cc.* infus. Astrag.)	104
1. 4.0 "	62	92
1. 5.0 "	68	92
1.10.0 "	68	96
1.30 0 "	66	95
1.33.0 "	15	94 see curve.
2. 0.0 "	58	84

In this experiment the vagus was tested at 2 P.M. and found active.

In this experiment was seen a great arhythmia of the heart's action, which I have seen in experiments by Dr. J. M. Murray with aconitia, and in my own with *Lycoctonia*. Here the heart runs alternately fast and slow.

EXPERIMENT 12.—Rabbit.

Time.	Pulse.	Pressure.
1. 1 0 P.M.	76	116
	Infus. Astrag. 4 *cc.*	
1. 2.15 "	68	100
1. 3.15 "	77	96
1. 4.15 "	70	110
	Infus. Astrag. 4 *cc.*	
1. 5.30 "	62	104
1. 8 30 "	68	114
1. 8.45 "	Infus. Digitalis 4 *cc.*	
1. 9.45 "	55	120
1.17.45 "	68	116
1.30.15 "	Infus. Astrag. 4 *cc.*	
1.33.15 "	64	110
1.38.15 P.M.	64	84
1.38. 0	Infus. Astrag.	
1.38.30 "	46	68
1.38.45	Infus. Digit., 4 *cc.*	
1.41. 0 "	48	80

2 P.M., death.

As is seen by an examination of the above experiments, the infusion lowers the rate of the heart-beat, and temporarily increases the arterial tension, after which it falls The pneumogastrics are not paralyzed by it.

The infusion of digitalis was seen to temporarily improve the arterial tension when falling. The diminution of sensibility by this drug and its slowing action on the heart show that it would be an important medicinal agent. Like aconite, it lowers the frequency and force of the heart; but, unlike it, does not greatly affect the arterial tension. Its action on the salivary glands is to increase their activity.

The active principle of this plant is also a powerful mydriatic, like atropine or its congeners. As to the antidotes for this agent, they must be addressed to counteracting the effect of the drug on the heart and on the nervous system. The action of this plant may be formulated as follows:

1. It decreases the irritability of the motor nerves.
2. Greatly affects the sensory ganglia of the central nervous system, preventing them from readily receiving impressions.
3. Has a spinal tetanic action.
4. Kills mainly by arrest of the heart.
5. Increases the salivary secretion.
6. Has a stupefying action on the brain.
7. Reduces the cardiac force and frequency.
8. Temporarily increases arterial tension, but finally decreases it.
9. It greatly dilates the pupil.

EASTON, PA.

Dr. Frederick Hoffmann, of New York, has disposed of his drug store (the purchaser being Dr. Wm. Mettenheimer), for the purpose of being able to devote his whole time to the duties of his office, as Chemical Analyst to the State Board of Health of New York.

[ORIGINAL COMMUNICATION.]

Alcoholometric Chart.*

BY A. B. LYONS, M.D.

THE table of corrections for temperature which usually accompanies the alcoholometer, or is affixed to it, is so incomplete and, in fact, so inaccurate, that I have drawn up the accompanying chart, which I have found, for my own use, extremely convenient and useful. The data from which it is constructed are taken from the elaborate tables of Guy Lussac. The chart, however, I find much more convenient for reference, because, while it is equally comprehensive and accurate, it is more compact in form, and presents the facts to the eye in such a way that they can be taken in, as it were, at a glance. The integral corrections on the chart are represented by irregular curved lines, like the isothermal lines on some maps. The perpendicular line in the centre, at 60° F., is, of course, that on which the reading of the alcoholometer is to be taken without correction. If the alcoholometer indicates 55%, at a temperature of 70° F., the correction to be made is — 2°, and the true strength, at the standard temperature of 60° F., is 53%. This is found from the chart by following to their intersection the lines marked respectively 55% (at the sides of the chart) and 70° (at the top or bottom). The point of intersection falls exactly on the line of correction marked — 2.

Suppose the reading of the instrument to have been again 55%, but the temperature to be 47° F. The intersection of the lines falls now midway between the lines of correction marked + 2 and + 3. The correction is, therefore, + 2½%, and the corrected reading 57½%.

In absence of an alcoholometer, the specific gravity of the spirit may be taken, either by the hydrometer or the specific gravity bottle, noting the temperature, without attempting to bring it to the usual standard of 60° F. Suppose the specific gravity to be .935, temperature 81° F. Referring to the chart, it is seen from the column at the right, marked specific gravity, that the alcoholometer would give a reading of 50%, scant. The temperature correction is — 4 8%, and the spirit therefore contains, at 60° F., 45 2% by volume of absolute alcohol.

If it is required to find the percentage of absolute alcohol, at the temperature at which the observation is made, recourse is had to the lines which cross the chart diagonally. In the example just given, the intersection of the perpendicular and horizontal lines falls exactly on the diagonal line marked 45%, which is, therefore, the corrected reading. If the intersection fall between two of these diagonal lines, it will be best to take the correction from the nearest diagonal, reading, for this correction, the amount of divergence at the temperature in question from the horizontal line crossed at 60° F.

An example will explain the modus operandi, which is, in fact, sufficiently simple. Specific gravity .886, temperature 75° F. The lines intersect at a point nearest the diagonal marked 70%. This diagonal, at 75° F., has diverged 3.2% by the chart, from the horizontal (70%) which it crosses on the central line, 60° F. As the temperature is above 60° F., the correction is, of course, subtractive, and the spirit contains 72 — 3.2 = 68.8% by volume of absolute alcohol, at 75° F.

To render the chart more complete, I have added, also, columns at the right, in which, the volume per cent. being known, the weight per cent. of absolute alcohol, or the volume per cent. of commercial alcohol may be found by simple inspection. In the example just given, the spirit contains, at 60° F., 72 — 2.7 = 69.3% by volume of absolute alcohol. This is equivalent, as will be seen by reference to the chart, to 62% by weight of absolute alcohol, and to 73.5% by volume of commercial alcohol. To prepare from commercial alcohol a spirit of the same strength, we might take 73.5 measures of common alcohol (of full strength), and add enough water to make the whole fill one hundred measures. The result would be inaccurate, however, owing to the elevation of temperature that always takes place in mixing alcohol with water, and where any approach to exactness was required, it would be necessary to cool the mixture, or take its temperature, and make the proper correction for expansion from data taken from the chart or otherwise. The chart, however, gives the data for a simpler process for arriving at the desired end. In the column headed "condensation," there are figures showing the amount of water over and above the proper supplementary volume contained in spirit of different strengths. Commercial alcohol, we find, contains already 1.32 volumes in every hundred that has disappeared, as we may say, by condensation; *i. e.*, 100 volumes contain 94 volumes of absolute alcohol, and 7.32 volumes (instead of the supplementary six volumes) of water.

In the problem before us the mixture is to contain 73.5 volumes of commercial alcohol; while it is to be made up also of 69.3 volumes of absolute alcohol and 30.7 + 3.4 = 34.1 volumes of water, both measured at 60° F. 30.7 is the supplement of 69.3, and 3.4 is taken from the chart, as the nearest figure, by interpolation. The 73.5 volumes of common alcohol contain 73.5 + .0732 = 5.38 volumes of water. Subtracting this from the total amount of water in the mixture, we have 34.1 — 5 38 = 28.72 volumes as the quantity of water that should be mixed with the common alcohol.

It will be seen that a great variety of problems may be solved by the data given in the chart; but I have endeavored so to arrange the various parts that its principal uses shall be obvious at a glance, and that each part shall be entirely independent of and not obscured by any other. Incidentally, it affords a convenient scale of comparison for the two thermometric scales in most common use. But its primary and most important use is to give, at a glance, the true temperature corrections to be applied to the readings of the ordinary alcoholometer or hydrometer.

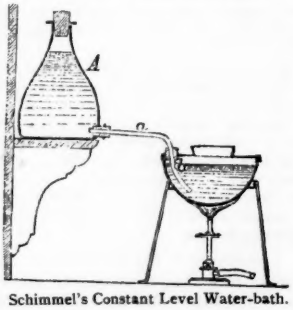
DETROIT, MICHIGAN.

* See Frontispiece.

A Constant Level Water-Bath.

BY FR. SCHIMMEL.

A RESERVOIR *A* of any desired capacity, filled with water and securely stoppered, is placed in a situation somewhat higher than the water-bath. From near its bottom projects a glass tube *a*, of about 7 *mm.* (about ¼ inch) bore, which is curved and is fitted into the cover of the water-bath. At a place corresponding to the line at which it is desired to maintain the level in the water-bath, a round hole *b*, corresponding to the full bore, is blown into the glass tube. As soon as the liquid in the water-bath sinks below the level of the hole *b*, air enters the reservoir, and water runs into the bath until the hole is below the level. The distance between the top and bottom of the outline of the hole is so small that only a small amount of water runs into the water-bath at a time, and the constant boiling of the water is not interfered with.



Schimmel's Constant Level Water-bath.

The apparatus may be varied by using a separate tube entering the neck of the reservoir for the admission of air, and another (fitted to an outlet near the bottom) for the flow of water.—*Dingler's Pol. Journ.*, 244, 150.

Self-Education for Young Pharmacists.*

BY PROF. P. W. BEDFORD.

"SELF-EDUCATION for young pharmacists—how can it best be accomplished, and what course of instruction is best adapted for this purpose?"

The large majority of young men who are to be the future dispensers of medicine, are not those who have taken advantage of the course of instruction offered by the several colleges of pharmacy which are now established in the several sections of our Union. They are mainly young men who have entered the stores primarily for the sake of employment for remuneration. In very many cases, they have great lack of sufficient education to adapt them for the responsibilities of the higher branches of the business, and yet having been in and about the store for a few years, they have become familiar, not only with the routine of the manual labor for which they were first employed, but daily observation has made them acquainted with the appearance and peculiarities of many of the drugs and chemicals they see about the store, but circumstances frequently occur by which their observation and slight knowledge is put to use by the employer. As time passes on, the lad, if intelligent and otherwise satisfactory, is by the employer requested to assume more responsible duties, and frequently the opportunity for him to make the right start in some other business or trade has gone by, and at the age of eighteen or twenty he finds himself too old to begin again at the foot of the ladder, to learn some business that to him has more attraction, and he cannot perhaps afford to temporarily relinquish the compensation for less lucrative employment.

In my extensive experience with young men who are growing up in the business, I can safely assert that the majority of them enter the business rather by accident than design, that the majority have left school without the proper amount of education, and that they stay in it for the present monetary value of their services.

There are thousands of such young men throughout our land; many of them feel that they cannot afford to go to those cities where colleges of pharmacy are established, in order to secure the advantages offered by such systematic instruction. Yet just here let me say that again my experience and observation justify me in asserting that the majority of those who have sufficient ambition and determination to secure a college of pharmacy course are the men who are the most successful and eminent in their calling.

It may not be amiss to insert some statistics which show the value of the course of instruction of the colleges of pharmacy, and the number of those who have in the past availed themselves of such privileges. While it is not possible at present to obtain correct statistics as to the number of those who have attended college lectures, my own knowledge and the records of the New York College of Pharmacy enable me to say that in the past the number of students who have attended lectures, has been three times as many as the graduates, that is, heretofore the number that applied for examination and graduated was scarcely more than one-third the number of the students that paid for instruction. During the past few years, the number of graduates is much larger in proportion, and probably the present ratio is about one-half.

The action taken in so many States in our Union toward enacting pharmacy laws, makes it absolutely necessary that the future pharmacist must be better trained and better fitted for his responsible duties than he could be under the lax laws that permit any man, however ignorant and incompetent, to open a drug store, and dispense drugs and medicines to the public.

To the young men now in drug stores, who feel their need of more light as to how they may better acquaint themselves with the drugs and medicines they handle, how they may learn to properly prepare and dispense medicines, my further remarks will be addressed.

Presuming that you have or can secure the privilege, let me advise you to take from one-half to one hour, or even more if possible, twice a day *for study*. This must be done systematically and conscientiously.

The aids to the work must be a few books, which will be designated, and your employer or one of the older clerks. Your employer should be interested in the matter, and, if you are prudent, you will secure his hearty co-operation.

As to books for study which should be accessible at all times, the following are recommended, those with the star being absolutely necessary, and all the others extremely desirable.

* Attfield's Pharmaceutical Chemistry.
* National Dispensatory, by Stillé and Maisch.
Organic Materia Medica, by Prof. J. M. Maisch.
Pharmacographia, by Flückiger and Hanbury.
* Wood's Text-book of Botany.
* Gray's Lessons in Botany.
Cooke's Structural Botany.
* Parrish's Practical Pharmacy.
* United States Pharmacopœia. Sixth decennial revision.
Prescription Writing, by M. D. Mann, M.D. (which will be ready by September).
Tanner's Memoranda of Poisons.

Most of these are or should be in every pharmaceutical establishment, and while other books might be named of great value *for reference*, the above should be the choice for *study*. If the student expects to attend a College of Pharmacy course, it would be well to give Gray's Lessons the preference, as that is the one usually adopted by those institutions, although Wood's is the simpler and better one for the student.

Now as to what course of study should be pursued, and how to divide the time advantageously between the several departments of the proposed course.

Daily duties require that a considerable variety of drugs shall be handled in the numerous sales that are made. Each day take some one drug, select a specimen of it, take the National Dispensatory and read what that work says about it. Suppose it be cloves that the student selects. On taking up the Dispensatory, he finds the officinal name and the definition: the unexpanded flowers of Caryophyllus aromaticus. Nat. ord., Myrtaceæ. Then its origin, and he refreshes his memory on geography as he locates its habitat. Its collection and description follows, and as he reads the description, he compares the actual appearance with the printed words. A pocket lens may here be used to advantage, as an aid in observing the minute details of clove structure. Then follows some information about other parts of the plant used for the manufacture of oil, or to adulterate the powder, the officinal preparations into which cloves enter as an ingredient, and lastly its medical action and uses.

Now, if the student would have the facts indelibly impressed on his mind, he will, if it be his own book, underline the most prominent facts or information as he reads and examines the article, and then or afterwards enter in a goodly-sized memorandum book the salient points under each of the heads named.

If the substance be a chemical, he takes a fair sample; in this case, it may be bicarbonate of sodium, and with his Dispensatory he will also take Attfield's Chemistry. It is to be supposed that he is also reading chemistry and experimenting as he goes, but to this we will refer later. Both the books alluded to tell him the process by which this salt is made, and, if he chooses, he can, on the scale of a test-tube, make a small quantity. It will be quite sufficient to impress upon his mind the process. As this is going on, he reads what impurities may be present, how they occur, how they can be removed, and with some that is in stock he experiments as to purity, solubility, and identity.

If it be some preparation of the Pharmacopœia, he takes *that* book, reads over carefully the formula by which it is made, and then the Dispensatory, and the comments there

* Paper read at the meeting of the New York State Pharmaceutical Association, at Albany.

made will frequently throw much light on the more curtly stated formula of the Pharmacopœia. If it be a chemical preparation, consult at the same time Attfield's Chemistry, and frequently that will give additional information and an experimental formula by which it can be made on a small scale. In your note-book put a few prominent points about the preparation, which may embrace something like this example:

"Aqua ammoniæ: a ten per cent solution of ammonia gas; NH_3: 17: sp. gr. 0.959; a pungent alkaline liquid; should be free from foreign odor, give no precipitates with lime water (carbonic acid), nor with tests for sulphates, chlorides, calcium, or metals.

The great thing, however, I would insist upon in the case of my young constituents is, that each and every possible article be made by the student himself, and that small samples of chemicals and pharmaceutical preparations that are in stock be tested by the methods given in the Pharmacopœia.

At a recent lecture the writer made before a class of students, in a test-tube, nearly all the important chemical preparations of mercury, sulphate, yellow sulphate, mercuric chloride, mercurous chloride, nitrate, red oxide, black oxide, yellow oxide, black and yellow sulphuret, ammoniated mercury, and red iodide. This is only an illustration of how simply and readily all these articles can be produced on the small scale of a test-tube experiment, and such information is worth far more than hours of study devoted to endeavoring to cram the brain by the routine of reading. No amount of reading can fix in the mind the facts of chemistry and pharmacy that can better be obtained by a few simple and inexpensive experiments.

As yet, I have said nothing about botany, save to mention the names of text-books. A text-book, a pocket lens, a stout jack-knife or a small trowel, a tin box, a walk in the fields or woods are the requisites. The careful dissection of the plant, comparing observation with printed description, will soon give you the ground work of botanical science, and the repetition and extension of scope and subject will make you an expert if you choose to follow it up. It is the best recreation to one who is otherwise closely confined, and the knowledge of botany is the main structure to a thorough understanding of materia medica.

The acquirement of pharmaceutical manipulation, the neat and rapid yet accurate preparation of those articles that are required by the physician's prescription, is an art that comes by observation, practice, and the search of current pharmaceutical literature. Parrish's Pharmacy is named as the special text-book in this department, and none other that I have yet seen is equal to it. The best aid to this is a willing and competent employer or older clerk, and see to it that you are willing to give time and patience to master each detail.

To aid you in a knowlege of the peculiarities of prescription writing, many of the abbreviations, etc., as well as to have a succint tabulated list of the preparations of drugs, their doses in a handy, portable form, I warmly commend the study of Mann's Prescription Writing, and a longer and fuller list of abbreviations will be found in Parrish's Pharmacy. A similar handy volume will give you the most desirable information relative to poisons and dangerous drugs and chemicals, their antidotes, treatment, etc. I refer to Tanner's Memoranda of Poisons.

Having now alluded as fully as I should in a paper of this kind to the several branches which constitute our profession—botany, materia medica, chemistry, and pharmacy—it yet remains for me to say that, where the student finds himself so located that he is not alone in his desire to study more and systematically about the things of his calling, he should endeavor to induce other congenial friends to join him to meet together occasionally, and by together making experiments and by questioning each other in turn, they may mutually be an advantage.

If it be possible in any surburban town, remote from cities where colleges of pharmacy are located, to organize a class among the stay-at-homes, and they can find among their employers those who are competent and willing to give an evening for occasional instruction, then it cannot fail to benefit both employers and clerks. Such an organization was effected a few winters ago in Saratoga Springs, and as a result I know that every attendant was benefited, and among these young men I can recall some of the best among the graduates and students of the New York College of Pharmacy.

My remarks have been addressed to young men who desire self-instruction, yet I believe I will give them the best advice if I say that, after this course of self-instruction, the very best thing you can do is to make an effort to attend a College of Pharmacy. The systematic instruction there afforded will be the more appreciated and quickly apprehended, and prove the more serviceable because the diploma of a college of pharmacy is a guarantee to any community where you may locate that you have given study to your calling, and are deemed proficient by those who are qualified to judge; while, if you are a stranger, it might take a long while to inspire the same confidence and command the respect that a college diploma always carries with it.

Peculiar Behavior of Hydrochlorate of Quinine.

DR. VULPIUS had his attention drawn to a peculiar retardation of the reaction between hydrochlorate of quinine and nitrate of silver, and found on further examination that no precipitate of chloride of silver was formed if the solutions were mixed under certain precautions.

In the first place, both solutions must be considerably diluted, and care must be taken that the nitrate of silver solution shall, at no time, accumulate in any one place in the mixture. If this is the case—as, for instance, if a drop of the silver solution be allowed to run down the edge of the vessel into the quinine solution without the latter being stirred—the usual precipitate of chloride of silver will make its appearance, and though this precipitate may be almost rendered invisible by brisk agitation, yet it cannot be entirely redissolved. But, if to fifty grams of a one-per-cent solution of hydrochlorate of quinine, kept in constant rotary motion, a one-per-cent solution of nitrate of silver be added gradually and in drops, it will require more than ten grams of the latter before a decided precipitate will make its apearance. It would, therefore, seem as if the quinine salt could form, at least in the beginning, a double salt with silver. There appears to be, also, a difference between the various alkaloids as to their capability of forming this double salt, a solution of hydrochlorate of morphine, for instance, producing under similar conditions, an instantaneous precipitate of chloride of silver.—*Arch. d. Pharm*, iii., 20, 361.

Ferri Saccharas (Ferrum Oxydatum Saccharatum Solubile, Ph.G.).

BY DR. C. BRUNNENGRAEBER.

THE author has proposed an improved process for the preparation of the saccharate of iron (here generally called saccharated carbonate of iron), which has been adopted in the new German Pharmacopœia. It is as follows:

	Parts.
Solution of chloride of iron (ferric); spec. grav. 1.280 to 1.282	30
Carbonate of sodium	24
Solution of soda, sp. gr. 1.159 to 1.163	24
Bicarbonate of sodium	9
Sugar, in powder	q. s.
Water	q. s.
Boiling water	q. s.

The solution of chloride of iron is mixed with a solution of *nine* (9) *parts* of sugar in *nine* (9) *parts* of water. The carbonate of sodium having been dissolved in *forty-eight* (48) *parts* of hot water, after cooling, the solution is slowly poured, stirring constantly, into the first prepared mixture. After most of the carbonic acid has escaped, the whole mixture is allowed to stand until it has become clear. The

bicarbonate of sodium having then been added, it is diluted with *six hundred* (600) *parts* of boiling water, and set aside to settle. The supernatant liquid is removed by means of a siphon, and the precipitate again mixed with *four hundred* (400) *parts* of hot water. The decantation and washing having been once more repeated, the precipitate is collected on a moistened strainer, washed with hot water until the washings, diluted with five volumes of water, are no longer rendered more than opalescent by nitrate of silver, and the residue pressed. It is then placed in a tared porcelain capsule containing *fifty* (50) *parts* of sugar, evaporated to dryness on a water-bath, the residue reduced to powder, and mixed with enough sugar to produce *one hundred* (100) *parts*.

The product is a red-brown, sweet powder, having a ferruginous taste. It contains three per cent of iron. With twenty parts of water, it yields a perfectly clear, red-brown, scarcely alkaline liquid, which is not altered by ferrocyanide of potassium, unless hydrochloric acid be added, which produces at first a dirty green, afterwards a pure blue color.

A four per cent aqueous solution, heated with excess of diluted sulphuric acid, and again cooled, should not be rendered more than opalescent by nitrate of silver.

Assay:—Two grams of the preparation are ignited, with access of air, until the sugar is destroyed; the residue is powdered, repeatedly extracted with hot hydrochloric acid, and the filtrate, mixed with a few crystals of chlorate of potassium, heated until all the chlorine is oxidized or removed. After cooling, one gram of iodide of potassium is added, and the whole is set aside for one hour in a glass-stoppered vial in a warm place. On now adding a little solution of iodide of starch, it should require 10 to 10.7 *cc.* of the volumetric solution of hyposulphite of sodium to combine with the separated iodine.

Essence for Raspberry or Strawberry Lemonades.

THESE may be prepared, according to the *Industrie-Blätter*, in the following manner:

Upon fifty pounds of the fresh and cleaned berries pour fourteen gallons of 85 per cent alcohol; let stand for twenty-four hours; then add about six gallons of water, and distil off thirteen gallons.

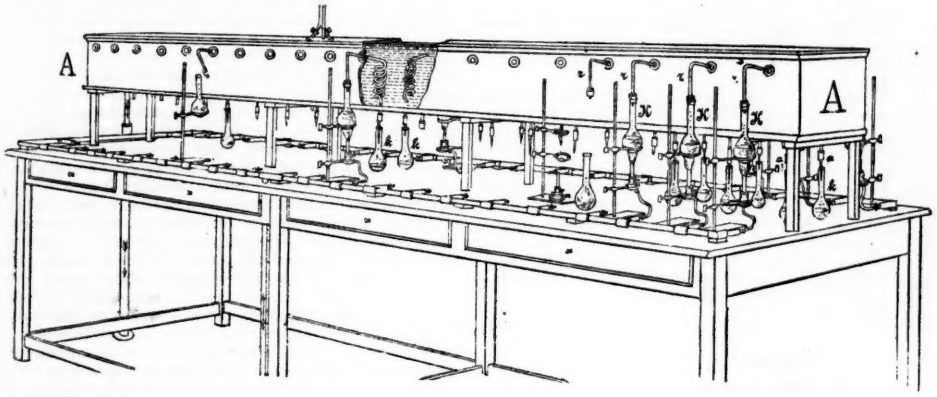
The concentrated essence does not possess a strong odor, which is developed only on dilution. A very small quantity of the essence is therefore necessary for flavoring. Prepared in the manner stated, the essences keep well.

A good coloring matter (bright-red) is the expressed juice of elder berries.

Apparatus for Performing a number of Simultaneous Distillations of Volatile Liquids.

IN our June number (p. 165) we gave an abstract of the contents of a pamphlet on Wine Analysis and the Estimation of Alcohol, published by the Experimental Institute for Wine and Fruit Culture at Klosterneuburg, near Vienna.* We stated there, that a very compact and convenient apparatus was in use at that institute for carrying on a large number of distillations at one time. Since we published the article, we have had a partial drawing and cut made which will illustrate the arrangement, and may be the means of affording some useful hint or suggestion to some of our readers.

The apparatus consists of a wooden condensing box 12 feet 4 inches long, 12½ inches wide, and 11½ inches high, which rests on six legs on a suitable table. The interior of the box is lined with zinc. On both sides, immediately below the upper edge, are twenty-four openings connecting with tin worms inside, the outlet of which passes through the bottom. In the openings, on both sides, are inserted, by means of well-fitting corks, bent glass-tubes, *r r*, provided with rubber stoppers intended to be inserted into the flask *k*, in which the volatile liquid is to be distilled. The



Distilling Apparatus for Laboratory Purposes.

mode of inserting the end of the upper leg of the glass tube *a* into the orifice of the condensing worm *c* is shown in the second cut (see next page), where *b* represents a perforated cork. The interior of the box is supplied with a continuous flow of cold water.

On Extract of Guachamaca.

THE number of remedies capable of allaying convulsions of the motor apparatus is small and circumscribed. In spasms, tetanus, and epileptic attacks, we possess, outside of narcotic remedies, perhaps only one other—namely, curare, which is itself often unsatisfactory. It appears now that a new remedy of the desired sphere of action has been discovered in the extract of guachamaca.

Dr Schiffer, who lately read a paper on this subject before the Berlin Medical Society, had obtained some of the extract from Dr. Karl Sachs, who had come in possession, while returning from Venezuela, of two Guachamaca trees, to which the most wonderful effects are ascribed by the natives. The plant in question appears to have become only recently known; only a few scattered botanical notices by some South American physicians exist, according to whom it belongs to the nat. ord. Apocynaceæ. The best and most simple preparation is an aqueous extract,

* Die Kaiserlich-Königliche chemisch-physiologische Versuchsstation für Wein- und Obstbau in Klosterneuburg bei Wien.

prepared on the water-bath. It contains an alkaloid, soluble in water, but little soluble in absolute alcohol, and insoluble in ether or chloroform. In these respects it resembles curare; also by the fact that the active principle is almost completely precipitated by tannin. Most of the alkaloid exists in the bark and contiguous layers; some, however, also in the wood. The therapeutic effect differs much according to the season. During the rainy season, a copious supply of milky juice exudes from incisions made in the bark. This juice is the most active form. To produce the specific effects of the drug, 10 milligrams (one-sixth grain) of the extract are required for a frog. The symptoms, varied in intensity by the dose, begin to show themselves after fifteen to eighteen minutes, and then follow each other rapidly. At first the animal becomes tired, hangs down its head, permits itself to be laid on the back, does not draw up the leg when touched, etc. In a few minutes it appears paralyzed, as if by curare, with this difference, however, that *respiration continues*. The circulation and action of the heart are, of course, unchanged. If the dose was large, death ensues; if moderate, recovery takes place after one or two days.

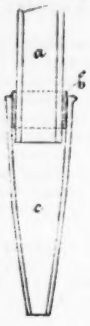


FIG. 2.

Dr. Schiffer had, so far, made but few experiments of the remedy upon man. A small dose injected in himself produced no abnormal effects. A hypodermic injection of 10 milligrams administered to a young man suffering from spasms (in Dr. Frerich's clinic, at Berlin), remained without effect for three-quarters of an hour, but afterwards the patient fell into a deep sleep, lasting three hours (in day-time), and then awoke without feeling the slightest untoward effects.

Dr. Schiffer, therefore, believes that the remedy may be found valuable in diseases involving an exaggerated action of the motor apparatus, and possibly also as a general hypnotic.—*Pharm. Zeit.*, June 7th.

Saccharate of Coffee.*

BY CARLO PAVESI, OF MORTARA.

THE author describes a new method of concentrating and administering the valuable and useful constituents of coffee, as follows:

Roasted coffee (best) ....1 part.
Refined sugar ....2 parts.
Warm water..... ....q. s.

The coffee is exhausted, in a convenient displacement apparatus, of all its soluble constituents, by means of the warm water; the clear, brown percolate is mixed with the sugar, and evaporated, at a temperature not exceeding 50° C. (122° F.), in a suitable apparatus, to dryness. Finally, it is reduced to powder, and kept in well-closed vessels.

The evaporating vessel should be shallow, so as to present a large surface of liquid to the air; or, better still, a vacuum-apparatus may be used.

The product is a brownish powder, of a coffee odor, a sweet and slightly bitter, very agreeable taste, and very soluble in cold water. Dissolved in boiling water, it yields a very fine cup of coffee.

If made into a paste with tragacanth, it may be formed in tablets or troches—a very convenient form of use.

Cold Cream.

A RECOGNIZED formula for this popular and useful preparation is desirable, both for its own sake and for the sake of elegant pharmacy. There must, we think, be something inherently good in it as a remedial agent in that it has survived so many centuries, and still retains very much of its popularity in face of so many modern competitive introductions, such as glycerin or the still more recent hydrocarbon preparations. On the other hand, we feel that it may be retorted that there must be something inherently bad in it, in that it has been so much neglected by pharmacists and revision committees; so that no satisfactory understanding has as yet been arrived at as to what properly constitutes a cold cream. In proof of this, we may state that we have for many years back collected all the formulæ that have been given for cold creams—not a few now—and no two of these, we are bound to confess, are exactly alike; while in many cases the widest divergence exists. The formulæ thus collected may roughly be divided into three classes:—First, those which contain no rose-water, being simply ointments composed of almond oil, wax, and spermaceti, with otto of rose for perfume, or almond oil with glycerin, etc, or composed wholly of some such substitute as the hydrocarbon compound adepsine. Second—those composed of almond oil, wax, spermaceti, and rose-water, together with some saponifying agent, such as solution of potassa or soda, soap, borax, etc. Lastly—those composed of the foregoing ingredients in variable proportion, but without the alkaline substance. The first class may be dismissed in a word—they are not cold creams. The second may be considered, in the great majority of instances, as inadmissible from the irritating effect which they more or less produce on excoriated and tender skins. The last, therefore, are the only formulæ that ought to be considered in determining what constitutes a proper cold cream. An analysis also of this last class greatly assists in arriving at a conclusion as to the relative proportions of the different ingredients. Some of the formulæ, for example, are constructed more on the principle of being salve for a tender conscience than a salve for a tender skin. The rose-water is added not to make a cream, but for the mere sake of asserting that it is present in the preparation. In other words, it is added in quantity so minute that a dexterous manipulator might easily switch the whole of it over the side of the vessel in process of stirring, so that, on standing, there could by no possibility be any separation. In the majority of cases, however, a uniform ratio of two parts and one part respectively is observed between the almond oil and rose-water, and this again, it is needless to point out, determines to a great extent the weight of the solidifying ingredients necessary to be added. In the case of the United States Pharmacopœia formula, the proportions are as near as possible two parts almond oil, 1 part rose-water, ½ part spermaceti, and ⅛ part white wax. In the recommendations of the Revision Committee, the relative proportions of the two first ingredients have still been retained, but the proportion of spermaceti has been slightly increased, and paraffin has been substituted for white wax; while a blank quantity of glycerin is suggested to replace part of the rose-water, and the further addition of soap-powder or borax is also suggested. Nothing could better illustrate the unsatisfactory state of the subject than these recommendations. Evidently dissatisfaction is felt with the existing formula, or no change would have been proposed; and equally apparent is it that no definite conclusions have been arrived at, or there would not have been so many alternative suggestions given. In these circumstances it might be considered hazardous to give either formula or opinion on the subject, were it not for the fact that many seem glad of any suggestions, however insignificant. We submit the following in the conviction that as many fail in making a good cream from want of knowing how to make it as from want of a proper formula from which to make it.

In the first place, it seems to be sometimes overlooked that cold cream may be treated either as a simple mechanical mixture or as a proper emulsion, and that, according as it is treated either as the one or the other, so will there need to be a modification, not only of the solidifying ingredients entering into its composition, but also of the manipulations in preparing it. To mix one part of rose

* Degli oleosaccari e specialmente del saccarato di Caffe. *Annali di Chim.*, 1882, 225.

water in two parts of almond oil in presence of wax and spermaceti is no very difficult task, and might be accomplished even by a novice, but to mix them so that they will not only be inseparable, but will also mix with other substances without separation, requires something more than the bare knowledge gained from such directions as "misce," "fiat secundum artem," or "stir constantly while cooling," which generally accompany such formulæ. Another point we fear frequently overlooked is, that in preparing cold cream the attention should not be divided between it and other duties, doing this and that, and stirring the cream between hands. Manipulation such as this is sure to end in failure, and probably accounts for much of the dissatisfaction felt with the formula from which it happens to be prepared. A good preparation can be made from many of the published formulæ, keeping these two points in view; but, if further directions are necessary, attention must be given more minutely to the effect that manipulation has on the preparation itself, and also on the relative proportions of the different ingredients entering into it. In the case of all ordinary ointments, cold cream included, if they are stirred till cold, and then allowed to stand for some time undisturbed, they will set more or less —that is, they get firm throughout the whole mass. In this condition cold cream, if again stirred or broken up, will separate more or less, according as the ingredients have been in a coarser or finer state of mechanical subdivision. If it is at all allowed to set, this separation will take place sooner or later on being disturbed. If, on the other hand, the ointments, instead of being allowed to set, are thoroughly whipped up from time to time at short intervals, they will, instead of setting, get softer, and if the whipping is continued for a given time, they will continue permanently and uniformly soft. Thirty years ago —probably more now—when but a novice in matters pharmaceutical, we received lessons in thus creaming, as it was called, the ointments and pomades which we have never forgotten, and which has often proved useful to us since. We were kept for hours at a time whipping the ointments until they had quite lost their granular fracture on digging out with a spatula, and had assumed a smooth, silky appearance. Now, if cold cream be treated skilfully in this way, it passes from the state of what is best called a mechanical mixture into the condition of a proper emulsion—that is to say, the mixture is permanent for any length of time, it may be stirred without separating, and is quite miscible with other substances where heating is not required. Further, when treated in this way, the cold cream softens considerably, so that the proportions of wax and spermaceti necessary to make another cream, which is simply stirred till cold and then set aside, is quite unsuited for one which is prepared as now described. In this lies probably one explanation of the diversity of the proportions of wax and spermaceti given in different formulæ, as well as one explanation also of occasional failure to obtain a good cream, even where the same formula has been employed. No two operators will exactly judge alike as to when the preparation may be termed cold, and, consequently, when to stop stirring, and probably the same operator does not on every occasion cease when the cream is in a like condition. Hence, while each judges as to the proper proportion of wax and spermaceti for his mode of operation, it does not follow that his formula will suit the mode of operation pursued by others, nor does it even follow that success will in every case attend his own efforts, seeing the circumstances, as thus explained, are not always alike.

Taking the U. S. Pharmacopœia proportions as already given, and treating them as just explained, a cream will be obtained which, when properly emulsified, will pour from the jar. This is evidently too thin for ordinary use. We have not tried the Revision Committee's formula, as we have not only a strong dislike to the paraffin suggestion, and a stronger dislike still to the saponifying ingredient, but we have also a dislike to part with an old friend from which we have always obtained good results. The formula referred to is as follows:

Almond oil	8 parts.
Rose water	4½ "
Wax	1½ "
Spermaceti	1½ "

Proceed as above described. If failure follows the use of this formula, we cannot but conclude that the error is not in the formula but in the operator. In recommending it, however, we should suggest that the preparation of an emulsion be properly understood and kept in mind. Every one with the least experience knows that it cannot be made haphazard. The unmixable ingredient must be added gradually, with constant and uniform motion of the emulsifier, and with general application of the element termed brains. So with cold cream; the rose water must be slowly added to the melted ingredients when they are neither too hot nor too cold; the stirring must be constant, always in one direction, and experience alone must decide the proper moment for the stirring to cease, and the occasional whipping to be substituted.—*The Chemist and Druggist.*

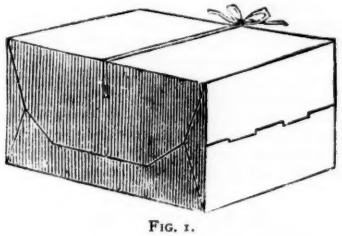


FIG. 1.

How to make Paper Boxes.

THE invention shown in the annexed engravings is a new construction of a folding box, having its body and cover in one piece, so that it can be set up without paste or other adhesive material. The blank, of which the body portion of the box is formed, is cut so as to form the flaps *A*, *B*, *C*, and the cover portion so as to form the flap *D*, and the fastening flap. The blank is then scored in such a manner that corresponding portions from the bottom and cover, and other corresponding rectangular portions form two sides of the box, the other two sides being closed by the folding in of the flaps of the main body of the box. The front portion of the box has slots formed through it to receive the ends of the locking flaps. The flaps of the body and cover are perforated to receive a cord or tape to secure the box in a folded position. It will be seen that the box is cheaply made, easily set up, and occupies a very small space for shipping or storing.

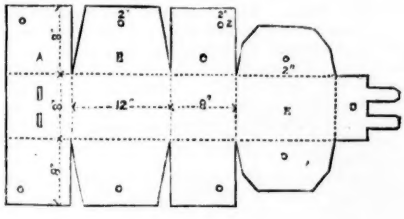


FIG. 2.

To the above description, taken from the *Scientific American*, the editor of the *Gardener's Chronicle* adds the following practical hints: Supposing a box is required twelve inches long, eight wide, and eight deep, the paper or card necessary for such a box must be of the shape and dimensions shown in the outline diagram. It is necessary that the holes should be in an exactly correct position, or the string will not pass them all. The hole of the flap

should be two inches from the edge, and in the exact centre at this position. The hole at *A* and *C* should be two inches each way from the outside corners, as shown, whilst the holes on flaps belonging to top of box *E* should be two inches from the line of fold, and in the centre at this position. The diagram is drawn to scale, and, if properly made, a very compact box will result, as in the second illustration. Of course, when the dimensions are altered, boxes of any size can be made, either larger or smaller.

New Method of Preparing Blisters.

MR. LIMOUSIN has devised a new form of blisters, with a view to afford to the physician a greater variety of choice in degree and kind of vesication, and also with a view of preserve the ready-made blister in better condition than is usually the case.

He spreads a thin layer of ordinary blistering cerate upon strong, thin, unsized paper, and covers it with the same. The vesicating layer is about one and a half millimeters in thickness, and one of its surfaces is camphorated. When using the blister, its outline is marked upon the paper covering it; it is then cut off, and applied to the part by means of a piece of adhesive plaster. The covering paper may be readily removed, both from the plain and from the camphorated side, by means of a wet sponge. If the physician orders a blister covered with oiled paper, it is only necessary to saturate the covering paper with oil.

The same process may be also used for the preparation of other plasters.—*Rép. de Pharm.*, June, 1882.

On Acetate of Iron.

BY B. REINITZER.

IT is well known that ferric hydrate precipitated by ammonia from a hot solution, is scarcely dissolved by glacial acetic acid, even at a boiling temperature. Ferric hydrate precipitated and washed cold, is easily soluble in acetic acid, but the solution contains considerable quantities of the alkali used in the precipitation, even though the washing of the precipitate be long continued. Neither is a good result obtained by double decomposition between sulphate of iron (ferric) and acetate of lead or acetate of barium.

I was near giving up the problem of preparing a perfectly pure acetate of iron, when I found that ferric hydrate, precipitated *cold* by ammonia, and afterwards washed with *hot* water, is readily soluble in hot acetic acid, and that this solution is completely free even from traces of ammonia and chlorine.

About fifty or sixty grams, or more, of crystallized, chemically pure, ferric chloride were dissolved in cold water, and gradually precipitated by ammonia until the latter was in excess. The precipitate was transferred to a large paper-filter and washed with boiling water until the filtrate ceased to give a reaction for chlorine. The ferric hydrate was then warmed with glacial acetic acid, in a beaker, on the water-bath. A perfectly clear, blood-red solution resulted, which, contrary to expectation and to the statement of chemical authorities, could be evaporated on the boiling water-bath, without yielding a residue insoluble in water.

It appears that but few chemists can have had, so far, a perfectly pure ferric acetate under their hands, since the property usually ascribed to the salt (viz., to separate all the iron as a basic acetate, on boiling the dilute solution) does not belong to the *pure* ferric acetate. A solution of this salt, either dilute or concentrated, if completely free from other salts, may be heated for hours without producing either an opalescence or a precipitate of a basic salt. But on adding any other salt, particularly the acetate of an alkali, the whole of the iron separates, at the first boiling, in form of the well-known red-brown, flocculent precipitate.—*Monatshefte d. Chem.* and *Pharm. Rundschau*, No. 16.

On the Manufacture of Lactic Acid.

BY CHARLES E. AVERY.

THE acids employed in the arts have been greatly cheapened and improved by chemical study. As a notable instance, allow me to call to your notice oxalic acid, at first procured from plants, afterward more cheaply by the reaction of nitric acid upon sugar, and finally with great cheapness by treating sawdust with caustic alkalies at a baking heat.

Apart from the chemical uses of the acids, as in dyeing, bleaching, metallurgy, etc., there is another set of uses, as in food and drink. In this field the industrial improvements have not been of so striking a nature, and as a result, the food acids, citric and tartaric, remain high in price.

Seeing that this field remained unoccupied, I was early attracted to it, and in 1873 noted down as a chance idea the substitution of acid lactates for acid tartrate of potash, which is the old familiar cream of tartar.

Practically speaking, I did nothing until 1879, when I took up the production of phosphoric acid from apatite or mineral phosphate of lime. I succeeded in making a fair acid cheaply, and was about to go further and make it chemically pure and cheaply as well, when I became aware that the first cost of materials was theoretically much larger than the first cost of materials for the production of lactic acid. Phosphoric acid was, moreover, by some considered objectionable, being a constituent of various urinary deposits. Lactic acid then became a subject of study.

In order fairly to set before you the investigation, I will re-state what most of you may know regarding lactic acid, the lactic fermentation, and the processes in use.

When milk turns sour spontaneously, the sugar of milk which it contains is converted into lactic acid, and Scheele, in 1780, first extracted lactic acid from sour milk.

Braconnet found the same acid in rice left under water to ferment, also in the juice of beet-root, which, after having undergone vinous fermentation, became sour and yielded lactic acid. He also found the acid in products of fermentation of many other vegetable infusions.

The same acid has been found in the sour water of starch factories, and in the well-known fermented cabbage or sauerkraut.

By lactic fermentation is understood the transformation of certain sugars, such as sugar of milk and glucose, into a syrupy acid, soluble in water, under the influence of a living being classed by the eminent French chemist and microscopist, Pasteur, among the bacteria.

Messrs. Frémy and Boutron, Pelouze and Gelis, ascertained the best conditions for the production of lactic acid, and found it, they say, to require the aid of nitrogenous albuminoid matter in a state of decomposition, and for its continuance that the acidity should be kept down by neutralization. For this purpose they used oxide of zinc, carbonate of soda, or, as I prefer, the carbonate of lime, that is to say, whiting or marble dust.

Pasteur brought out the idea that the albuminoid matter was non-essential, that it could be substituted by inorganic salts, and that the real cause of the change was not decomposing albuminoids, but a living ferment—establishing this latter fact which before was a conjecture.

It is substantially here that I depart from the beaten track. I find albuminoid matter, though not scientifically speaking, essential, is essential in a technical point of view. Moreover, it is not essential nor desirable that they should be decomposing albuminoids. I prefer them as fresh and free from putrefaction as possible. As I have no putrefaction in my solutions, the manufacture is no longer a nuisance; the odor with a pure ferment is even fragrant.

To obtain this fresh albuminoid matter at no further expense, and in large quantity, I leave in the glucose solution, made from the corn-meal, the albuminoid residue. And from this substitution I obtain the advantage of cheapness, the advantage of healthfulness, a crude product free from the products of putrefaction, and hence more

easily purified; and, lastly, the fermentation takes place in three or four days, instead of requiring ten days to a month as by other processes.

Bensch purifies his lactate of lime by extraction with water, filtration, and recrystallization, the details at present being non-essential. The only thing worth mention is that he was able to purify his crude material. It will be seen that cane-sugar is the source of his lactic acid, costing to start with eight to ten cents per pound, for any article not too dark and impure. To this sour milk and cheese are added, further increasing the expense, and the time required is a fortnight.

Considering the variability of the process, its unsavory nature and products, and the expense, it is not surprising lactic acid and the lactates have received little attention.

I find it is still a common impression among chemists that in the change of starch into glucose by the acid treatment, the transformation is very incomplete; that much of the starch remains as dextrin. This is not the case. By suitable precautions nearly all the starch should turn to glucose, and that this can be accomplished is shown by testing the solutions and residues with iodine. Neither starch nor soluble starch is shown. Then, by testing the solutions with six times their volume of alcohol, the substantial absence of dextrin may be shown.

Since we have some 70 per cent of starch-sugar in corn, and this converted into glucose will, by assimilation of water, increase in weight some 10 per cent, we have as the theoretical yield of acid 77 per cent. Now, Bensch found 9 kilos of cane-sugar to yield 10¾ kilos of neutral lactate of lime, and it is not surprising that a yield of 82 to 85 per cent of neutral lactate has been found from 70 per cent of starch, working by my process.

The process I adopt resolves itself into three portions: 1st, manufacture of solution for fermentation; 2d, the fermentation; 3d, the purification; and lastly, there is the use of the product itself as a separate consideration.

I mix 80 to 160 pounds of oil of vitriol with 2,000 pounds of cold water, and stir in 2,000 pounds ground maize; this corn meal may be from inferior corn, from corn more or less heated, soured, or otherwise changed. The average price of corn of good quality here is about one cent per pound, and much less in the West. Inferior qualities are of less cost. The vitriol can be bought at one and three-quarter cents per pound by single carboy, and would cost much less if chamber acid were used and made on the spot.

I let the meal mixture stand over night, and next morning add in portions 2,000 pounds of boiling water. After boiling until the tests are satisfactory, I run the hot mixture into the fermentation tank, and neutralize with 1,000 pounds carbonate of lime, stirring well. The carbonate of lime is, of course, in large excess. I then add 4,000 pounds cold water, and a variable amount of lactic ferment; one or two per cent seems to answer well, although a larger quantity induces fermentation more speedily, saving perhaps half a day, but less will suffice.

In a day's time the most vigorous action ensues, the carbonic acid, released from the carbonate of lime, escaping in large bubbles, giving the impression that the liquor is boiling. In three or four days' time, with good lactic yeast, the mass sets into crystals of lactate of lime, resembling thick mortar. I then dissolve the lactate in hot water, filter it, crystallize, press, and purify, much as in other processes, with two exceptions, however. I use animal charcoal to remove odor and color, and after acidulation, distil off the butyric acid that has been formed. By more rigorous precautions in the fermentation, I expect soon to be rid altogether of the butyric ferment, and had, indeed, already greatly reduced it, when a series of mishaps, caused partly by the cold of this unusual winter, and partly by my landlord's negligence, stopped for a time further progress. The work has now been resumed.

From experimental results already obtained on the small scale, I have reason to believe that I can reduce the waste and cost of purification, especially in the direction of animal charcoal, and experiments will speedily be resumed in this direction. I am much assisted in this search by the comparatively clean, pure, crude material with which I start, unlike the foul mass obtained by other processes of practical value. As regards the healthfulness of lactic acid there can be no doubt. Articles containing it have been sought out as food by the human race all over the world. Sour milk, buttermilk, and sauer-kraut are well known to be wholesome. Their reputation the world over is good, and they are used by laborers and peasantry as regular articles of diet. If there were any doubts, these would be dispelled when I state that lactic acid is present in the flesh itself, and in the mother's milk; that lactic acid is an active agent in the digestion of food in the stomach, and a constituent of the gastric juice. For this reason it is given medicinally for the cure of dyspepsia, as in the well-known preparation of lacto-peptine.

As to the value of lactic acid and acid lactates in raising bread, as substitutes for cream of tartar, there can be no question, for sour milk always has raised bread, and made good bread, and cream of tartar is a substitute for lactic acid rather than lactic acid a substitute for it. At present prices of milk the cost is greatly reduced. The corn is not fed to the cow partly to be wasted in maintaining heat and life, and partly to be returned as fat and decomposed sugar; but by a simple change turns almost completely to lactic acid. In one respect, however, I think an advantage may be fairly claimed for the acid lactate of lime over cream of tartar, namely, it will be hard for any cook, no matter how careless, to make either sour bread or alkaline bread, and every cook has such failures with cream of tartar. In cream of tartar or acid tartrate of potash, the acid molecule reacts on the saleratus to free the gas; unless the exact proportions be hit and the mixture be complete, the bread is alkaline wholly or in spots if the saleratus be in excess, and sour if the acid tartrate be in excess.

In the acid lactate of lime, in like manner, the acid molecule reacts to free gas from the saleratus.

The neutral lactate of lime left by the reaction again acts on the saleratus, forming lactate of soda, carbonate of lime, and free carbonic acid. Hence, we have a wide range of proportions in which the bread can be neither acid nor alkaline.

This carbonate of lime is itself a guard against acetous fermentation, or souring of the bread, and can hardly be objected to, as Liebig has recommended lime-water to be used in bread-making, partly to add the lime salts taken out by bolting, partly because it improves the quality of the bread and its appearance.

Now, what has been done in this investigation? I think the specimen before you will answer for one thing—that the acid lactate is a permanent salt, not readily changed to butyrate; not deliquescent, for it was dried on my laboratory table; not too gum-like to resist powdering.

In the next place, I have rid myself fully of the notion that starch, dextrin, and other carbo-hydrates undergo a true lactic fermentation.

In Miller and other works of good standing it is stated raw corn meal under like conditions had but partly changed lactic acid in forty days. Technically speaking, corn meal cannot furnish lactic acid unless the starch be first transformed. Nor will it then give lactic acid in quantity unless the albuminoid matter be either added or left in the presence of the nitrogenous phosphatic salts; if the neutralizer of the ferment is not a fulfilment of all the conditions for large and varied yield, we must at least have albuminoid matter present. It has been fully shown that it is not essential that this albuminoid should be rank or putrid, but that better and quicker results were obtained with fresh vegetable albuminoids than with stale animal albuminoids. I have improved the purification by introduction of animal charcoal and distillation, and have made the operations inoffensive. With regard to cheapness, little needs to be said. With a yield of lactic acid equalling fifty per cent of the weight of corn employed, with meal at one cent per pound, chalk or whiting at seven-eighths of a cent, and sulphuric acid at 1¾ cents, coal being assumed at $6 per ton,

the cost of materials for one pound of lactic acid is about 4¼ cents.

By shrewd location of the factory, and good buying in large quantities, these expenses may be largely reduced.

The operations of manufacture are not unlike those of the sugar refinery, and those are known not to be excessive.

Considering the experimental and theoretical data now in hand, it seems but reasonable to expect a larger yield and a less expense after further experimental work.—*Proceed. Society of Arts, Boston.*

Notes on Dialysis.

WHILE working with the dialyzer, Mr. Woellmer encountered some abnormal phenomena which induced him to make some experiments to ascertain the conditions producing them. His observations were the following:

If a liquid which is to be dialyzed is poured into a dialyzer covered with bladder, and this liquid as well as that contained in the exarysator (the surrounding vessel) be occasionally stirred up during the day, it will be noticed that the dialysis will be interrupted on the third or fourth day, according to the nature of the liquid. The membrane becomes covered with a slimy layer, which prevents further action. If the animal bladder, after complete cessation of dialysis, that is, after about eight days, be replaced by parchment paper, the dialysis begins afresh. If time can be spared and the liquid can be prevented from spoiling, a good deal more may be dialyzed through. Parchment paper does not permit an absolute separation of crystalloids and colloids, since even gum arabic, together with a whole series of extractive matter, may be detected in the surrounding liquid, and are left behind when the latter is evaporated. It may even be asserted that any substance which is sufficiently fine may pass through the pores of the parchment paper; and hence, that dialysis through parchment paper is merely a filtration in a more circumscribed sense [we differ with the author in this respect. ED. NEW REM.]. Animal membranes (such as bladder), however, only permit the passage of substances in *solution*. But even here it is scarcely possible to draw a sharp line between crystalloids and colloids, since substances pass through the membrane which are far from having the properties of crystalloids.

It would appear, from the above, that animal membranes alone should be used for dialysis.—*Pharm. Zeit.* and *Pharm. Post.*

Collyrium for Inflamed Conjunctiva.

A SOLUTION in common use in the Manhattan Eye and Ear Infirmary, of New York, as an application to the eye, is the following. It originated with Dr. C. R. Agnew, and is applied as a spray by means of an atomizer:

Tannin	gr. x.
Biborate of soda	gr. xx.
Glycerin	ʒ ij.
Water	O.ij.

Honey of Rose.

M. SILVIO PLEVANI, pharmacist of the Hospital of Ponte Vico, at Brescia, suggests the following as an improvement on the formula of Mel Rosæ:

Petals of fresh roses	125 grams.
White sugar	50 "

Beat together by gradual additions in a marble mortar with a wooden pestle. Add—

White honey	350 grams.
Water	100 "
Distilled rose-water	50 "

Mix, heat in a sand-bath, and afterwards express. Let it stand and deposit, and decant.

This yields a preparation of a fine rose color, with an astringent and acid taste and marked odor. Kept in a well-stoppered bottle, it may be preserved in good condition for a year.—*Journ. de Ph. et Chim.* and *Chem. and Drugg.*

Selections from the Non-officinal Formulary of the Dutch Society for the Advancement of Pharmacy.*

[Continued from page 173.]

Ferri Tannas. Tannate of Iron.

	Parts.
Solution of chloride of iron (ferric; spec. grav., 1.480–1.484)	35
Tannic acid	30
Alcohol (stronger)	12
Water of ammonia	q. s.
Distilled water	q. s.

Dilute the solution of chloride of iron with 200 parts of distilled water; precipitate completely with water of ammonia, collect the precipitate, wash it well, and mix it with a solution of the tannic acid in 40 parts of distilled water. Macerate for a few hours, and then add the alcohol. Collect the precipitate upon a strainer, wash it, and dry it.

It should be a coal-black powder.

Plumbi Tannas. Tannate of Lead.

	Parts.
Solution of subacetate of lead	100
Tannic acid	38
Distilled water	q. s.

Dilute the solution of subacetate of lead with 500 parts of distilled water, and add to it the tannic acid, previously dissolved in 500 parts of distilled water. Let the mixture stand a few hours, collect the precipitate upon a filter, wash it with about 500 parts of cold distilled water, and dry it at 25°–30° C. (77°–86° F.).

Tinctura Alexipharmaca Huxhami.

Huxham's Compound Tincture.

Huxham's Tincture (of Bark).

	Parts.
Red cinchona (Javanese or East Indian), in coarse powder	48
Orange peel, deprived of the inner white layer.	36
Serpentaria, bruised	9
Saffron, finely cut	4
Stronger alcohol	240
Water	240

Macerate for 7 days, express, and filter.

Tinctura Antasthmatica. Anti-asthmatic Tincture.

	Parts.
Licorice root, cut and bruised	12
Iris (blue flag) root	6
Squill, dried and bruised	3
Saffron, finely cut	2
Alcohol	214
Benzoic acid	1
Sugar	18

Macerate the first four ingredients with the alcohol during fourteen days; then express and dissolve in the strained liquid the acid and sugar. Finally filter.

Tinctura Antifebrilis Warburgi.

Warburg's Fever Tincture.

(Abbreviated Formula.)

	Parts.
Tincture of orange peel	5
Compound tincture of aloes	20
Stronger alcohol	15
Spirit of camphor	2
Sulphate of quinine	1

Dissolve the sulphate of quinine in the alcohol, and add the other liquids.

N. B.—Tincture of orange peel (Pharm. Neerl.) is prepared by macerating 1 part of sweet orange peel (only the outer yellow portion) with 6 parts of alcohol for 14 days.

Compound tincture of aloes (Pharm. Neerl.) is prepared by mixing equal parts of tincture of aloes (aloes 1, alcohol 8), tincture of myrrh (myrrh 1, stronger alcohol 8), and tincture of saffron (saffron 1, alcohol 8).

* See original title in our January number, page 10.

Spirit of camphor (Pharm. Neerl.) is composed of: camphor 1, stronger alcohol 12 parts.

Tinctura Chinoidini. Tincture of Chinoidin.

	Parts.
Purified chinoidin, in fine powder	2
Hydrochloric acid	1
Alcohol	17

Dissolve the chinoidin in the alcohol and acid, and filter.

Tinctura Digitalis Ætherea. Ethereal Tincture of Digitalis.

	Parts.
Digitalis, dried and in coarse powder	2
Ether	5
Stronger alcohol	15

Macerate during 7 days, express, filter (avoiding loss by evaporation), and preserve the filtrate in a dark place.

Tinctura Gelsemii. Tincture of Gelsemium.

	Parts.
Gelsemium, in powder	1
Alcohol	10

Macerate during 3 days, express and filter.

Tinctura Hyracei. Tincture of Hyraceum.

	Parts.
Cape hyraceum	1
Distilled water	6
Stronger alcohol	2

Macerate the hyraceum during 6 days with the distilled water. Then add the alcohol and filter.

[We quote this, *not* for the purpose of advising its use, but to attach to it a criticism. We think the time has arrived when the unscientific, empirical use of excrementitious medicines should finally be abandoned.—Ed. N. R.]

Tinctura Kamalæ. Tincture of Kamala.

	Parts.
Kamala	3
Stronger alcohol	8

Macerate during three days, and filter.

Tinctura Guaranæ. Tincture of Guarana.

	Parts.
Extract of guarana	1
Alcohol	16

Dissolve the extract in the alcohol, and, if necessary, filter.

Extractum Guaranæ. Extract of Guarana.

	Parts.
Guarana	1
Stronger alcohol	3
Water	q. s.

Mix the guarana with 2 parts of the alcohol and 3 parts of water, and let it stand 3 days, occasionally shaking. Then express and treat the residue with a mixture of 1 part of the alcohol and 2 parts of water. Let stand during 1 day, express, unite, and filter the strained liquids, and evaporate them, on a water-bath, to a thick extract.

Tinctura Puchury. Tincture of Puchury.

	Parts.
Puchury beans (from *Nectandra Puchury* Nees), in coarse powder	1
Stronger alcohol	8

Macerate during 7 days, express and filter.

Tinctura Pyrethri Composita. Compound Tincture of Pellitory. Walker's Toothache Tincture.

(Commonly called, in Dutch, "woordhoulder"="word-keeper.")

	Parts.
Pellitory root (*Anacyclus Pyrethrum*), finely cut	1
Guaiac resin, in powder	4
Stronger alcohol	24

Macerate during 7 days, express and filter.

Trimethylamina. Trimethylamine. (Propylamine, improperly so called.)

A liquid obtained from herring-brine [or, more abundantly, from beet-root molasses.—Ed. N. R.], containing 20% of pure trimethylamine. It is a clear, colorless liquid, of an alkaline reaction, the spec. grav. 1.124, and having a peculiar odor, recalling that of ammonia and herring-brine. It is miscible with water and alcohol in all proportions.

One part of hydrochloric acid of spec. grav. 1.170 should neutralize 3 parts of trimethylamine. The salt, obtained by evaporating this solution, should be completely soluble in absolute alcohol.

Cæsium.

Setterberg has worked up the tons of alum obtained in Marquart's laboratory as a by-product in the preparation of lithium salts from lepidolite, with a view to obtain larger quantities of the salts of cæsium and rubidium, and, if possible, metallic cæsium itself. Three or four hundredweight of the alums were dissolved in so much water that, at the boiling temperature, the liquid marked 20° B. The solution was decanted, and allowed to stand twelve to fourteen hours. The mother liquid contained no trace of cæsium or rubidium salts, but the crystals were rich in these metals; the author having found that each of the different alums is insoluble in saturated solutions of the more soluble ones. Hence, so long as the solution of the alums was saturated with potassium alum, it contained scarcely a trace of the other alums, and the solution showed no trace of cæsium, so long as it was saturated with rubidium alum. By repeating this process, the alums were obtained pure. Search for other alkali metals gave a negative result. In fourteen days, Setterberg prepared forty kilograms rubidium alum and ten kilograms cæsium alum, both pure. At 17° C., 100 parts of water dissolved 1.42 parts of rubidium alum and 0.38 part of cæsium alum. For the preparation of other salts, the alums were decomposed with barium hydrate, and the filtrate neutralized with the acid whose salt was desired. In this way the acid tartrates and the cyanides were prepared. For the preparation of metallic rubidium, 1,500 grams hydrogen rubidium tartrate, 150 grams calcium carbonate, and the required quantity of sugar were mixed and calcined, and the mixture transferred to a mercury flask and distilled. The yield was very unsatisfactory. A kilogram of hydrogen cæsium tartrate similarly treated afforded no result. The electrolytic method was then employed, first with the chloride, and then with the cyanide of cæsium. Finally, a mixture of four molecules of cæsium cyanide and one of barium cyanide was found to give a satisfactory result, the metal prepared showing in the spectroscope only a trace of sodium as an impurity. Cæsium resembles closely the other alkali metals. It is silver-white, malleable, and very soft at ordinary temperatures. Thrown on water, it bursts into flame, and swims about on the surface like potassium and rubidium. It inflames in the air when not protected. It fuses at about 26.5°, passing through a pasty condition. Its specific grav. is 1.88 at 15° C.—*Liebig's Annal. d. Chem.*

Detection of Traces of Iodoform and of Substances Capable of yielding Iodoform.

On heating an alkaline solution of resorcin with a trace of iodoform, a distinct red color is produced which disappears on the addition of an acid. This fact, observed by C. Reichel and F. Breinl, is the basis of the following test for substances capable of yielding iodoform.

Warm the substance with a solution of iodine in iodide of potassium, or in carbonate of potassium, and then add a quantity of solution of soda, somewhat larger than necessary, to cause the brown-yellow color to disappear. A solution of resorcin having now been added, the mixture is gently warmed, when a characteristic red color will make its appearance if any iodoform had been formed in the mixture.—*Ber. d. Oest. Ges. z. Förd. d. Chem. Ind.*, 1881 75.

Sugar in China.

From a report recently issued by the United States Consul at Canton, it appears that the cultivation of the sugar cane and the manufacture of sugar in China is at the present moment attracting considerable attention among the inhabitants of the celestial empire, and statistics, published by the Inspector-General of Customs at Shanghai, show a considerable increase, of late years, in the export of sugar to foreign countries. The following method of cultivating the sugar cane is employed by the Chinese.

When the cane is cut down, the tops are removed, and bound in bundles, and the leaves of these top cuttings are taken off; the cuttings themselves, which usually have four or five joints, are placed in a pond of fresh water, where they remain in soak for some twenty days; at the expiration of this time the joints will have thrown out sprouts or buds, these sprouts are about four or five inches in length; the cuttings are then planted in rows, about two feet apart, and at an angle of about 60°. The cuttings, when planted, are slightly manured with bean cake, composed of compressed pulp of the yellow China bean, which grows abundantly in the northern portion of the Empire. It requires ten months, from time of planting, before the crop is matured and ready for harvesting. From the root of this crop being well fertilized with the bean cake in a semi-liquid form, a second crop is produced; even a third is sometimes secured in this manner, but this is only when the soil is exceptionally rich. If the soil is not sufficienily fertile for a third crop, the roots are removed, the land cultivated and manured as for the first crop, and cuttings are planted every two years.

The cane, when cut, is collected in bundles, and conveyed by men or boats, according to locality, to the mill or crusher; this consists of two granite cylinders about three feet in length by eighteen inches in diameter, placed perpendicularly, the lower ends revolving in a stone socket, the upper in a frame of wood set into granite uprights; attached to or let into the upper end of these cylinders, are wooden cogs, and to the end of one of these cylinders is attached a strong wooden shaft or spindle, to the upper end of which is fixed a strong cross beam or lever, and to the outer end is attached the propelling power, which usually consists of four or five small oxen. The cane is passed between the cylinders, the juice running down into a small trench, which opens into a receptacle in the ground holding about twenty or thirty gallons; the juice is then conveyed in buckets to the boiling pans near at hand, and the cane, after being crushed, is taken away to be used as fodder. It is sometimes dried in the sun, and is used for fuel for boiling the sugar. The boiling pans are of cast iron, the greater part of those used being made at Fat Shan, about fifteeen miles from Canton. They are about eighteen inches deep by four feet in diameter, and are placed in brickwork side by side, usually four in number, with arches for fuel underneath, all covered with a mat or thatched shed. Three kinds of sugar are manufactured, namely: "rock candy," "green sugar," and "clayed sugar." The rock candy is made as follows: The sugar is placed with a sufficient quantity of water in a large boiling pan, similar to the ones already described, and boiled down to the proper consistence, which is ascertained by putting a small quantity into cold water; if it hardens at once, it is then time to run it off into earthen jars—these jars holding about fifty pounds each. They are always broken in three or four parts, and the parts are then bound together with a small quantity of lime cement and a few bamboo or rattan hoops. The hot liquid is then put into these broken jars, and a network of basket splints is placed over each, the ends of the splints extending in different directions through the liquid to the bottom of the jar. If the temperature is cold, it will crystallize in about fifteen days; if warm, it requires from twenty-five to thirty days. As it crystallizes it adheres to the splints, the portion not crystallizing settling at the bottom. The jars are then placed with the bottom part turned partly up over empty ones to allow the molasses to run out. When sufficiently drained, the jars are removed, the hoops taken off, and with a small hatchet the parts again broken asunder; the candy is then removed from the splints and spread out in the sun for a short time to purify or bleach. It is then assorted and packed into wooden tubs holding from forty to fifty pounds each.

Two qualities are always found in the jars, that at the bottom being darker and of less market value. The drainage from these jars is reboiled, and a poorer quality of brown sugar produced; from the refuse remaining after this last process, a cement is made by mixing with lime. The process pursued in the manufacture of "green" sugar is as follows: The juice is boiled in the month of December as it is taken from the crushers in buckets in one of the four boiling pans; a man is in attendance who pours the juice from one pan to the other. As soon as the liquid boils, a small portion of lime is put in, and the white of one or two eggs is placed in each pan. After a time, the dirt and refuse come on the surface, which is all skimmed off from time to time while the sugar is boiling. When sufficiently boiled, it is run off into a wooden cooler, about seven feet long, four feet wide, and one foot deep; and while in the hot liquid state, a man begins to stir it about with a piece of wood about a foot and a half long, and an inch thick, attached in the centre to a handle about four feet long. With this wooden instrument, the liquid is kept in constant motion until it begins to granulate and cool, and when cool enough, several men mix and rub it with their hands until all the lumps are bruised and the sugar becomes all of one color, which is a dark-yellow. It is then put in baskets, and sold to sugar dealers, who put it up in mat bags, and bring it to markets for sale to merchants for shipment.

The sugar principally exported to foreign countries is what is known as "clayed" sugar, and is made as follows: When the juice is boiled to a proper consistence, the whites of two eggs are put into each pan, which serves as a clarifier; when sufficiently boiled, it is run off into conical-shaped earthenware jars, which are placed in rows, either over trenches or empty jars. In the bottom of each jar containing the sugar is a small aperture, in which is placed a wisp or bung of straw; when the sugar has become sufficiently granulated by cooking and an occasional stirring, the straw bung is slightly loosened, the portion not becoming sugar escaping into the trench or empty jars. When sufficiently drained, a thin layer of straw is placed over the sugar, and over this a thick layer of clay. The jars are then packed away in a dry place, where they remain from thirty from forty days, according to the state of temperature. The coverings and straw bungs are then removed, and each jar will be found to contain three qualities or grades of sugar, the upper part being white, the next light-brown, and at the bottom a dark-brown. The drainings are sometimes used for distilling purposes, and also for making cement It appears that two distinct kinds of cane are grown in China, one being of a dark-purple color, and this is better for sugar than the other, which is green and quite tender; the latter is principally sold in pieces about eight inches to ten inches in length, to the natives, who eat it in its raw state.

Poisonous Effects of Iodoform.

It is some time since iodoform dressings have been commonly used in surgical practice. While their good effects remain incontestable, we have, on the other hand, reports of violent and even fatal intoxications caused by their use. Even the originator of the method, Dr. Koenig, reports such. In some patients iodoform produces morbid changes in the action of the heart, and, afterwards, of the brain. The graver symptoms are the following: 1. Sudden frequency and smallness of the pulse, sleeplessness, great disquietude, delirium, hallucinations, attacks of mania, confusion, melancholia, refusal of food. These symptoms of mental disturbance may pass away rapidly, but may also last for weeks and end in recovery. Some of them are followed by paralysis of the lungs and heart, and end in death. 2. After a short period of excitement, symptoms of

a severe meningo-cephalitis supervene, consisting of unconsciousness, coma and sopor, and involuntary passage of urine and fæces with great muscular debility. These cases generally end fatally.

In consequence of these facts, Dr. Koenig revokes his former general recommendation of iodoform-dressings, and wishes it to be confined, hereafter, to tuberculous affections of the joints.—*Centralbl. f. Chir.*, 1882, 7.

Detection of Iodine in the Urine of Patients Treated with Iodoform.

C. BERNBECK tried to obtain an iodine reaction by following Neubauer and Vogel's directions, to distil the urine with sulphuric acid. All the iodine is thereby supposed to pass into the distillate. This process was, however, found impracticable, on account of the high degree of dilution. Direct shaking of the iodine-holding urine with chloroform or carbon disulphide was also found useless, since the separated layers refuse to become clear.

The following method, however, was successful. 200 *cc.* of the urine are mixed with solution of potassa to alkaline reaction, then evaporated to dryness, and the residue ignited,* in order to destroy organic substances. The resulting ash is extracted with boiling alcohol, the solution filtered and the alcohol evaporated off on a water-bath. The residue is redissolved in a few *cc.* of distilled water, this solution mixed with a few drops of sulphuric acid previously exposed to the fumes of nitrous acid, and afterwards with a little carbon disulphide. After shaking, the latter assumes the well-known tint if iodine was present. Chlorine-water is less suitable for the separation of iodine, since any excess will produce a colorless compound with iodine.

If there is more than a trace of iodine present it may be determined, in aqueous solution, by palladium chloride.—*Pharm. Zeit.*, No. 29.

Bateman's Pectoral Drops.

DR. HERMANN HAGER formerly published the statement in his handbook that Bateman's drops were a benzoated tincture of opium, colored with cochineal. A later analysis shows a larger proportion of opium and some castor. He now gives the following formula:

Tincture of opium	1½ oz.
Tincture of opium, benzoated	20 "
Tincture of Canada castor	5 "
Cochineal, ground	1 "

Dose for adults: 20 to 30 drops morning and evening. Not to be given to children under ten years of age.—*Pharm. Zeitung.*

Laxative Fruit-Lozenges.

	Parts.
Aqueous extract of senna first deprived of its resin	40
Cassia fistula pulp	20
Tamarind pulp	5
Extract of licorice, Spanish	4
Resin of scammony	4
Sugar (and tartaric acid)	49

Make into large oval lozenges of 82 grains each, which are dipped in melted chocolate and afterwards covered with a crystalline coat of pure cane sugar.—*Stearns' New Idea.*

Carbolized Gauze.

SINCE the introduction of carbolized gauze the question has frequently been discussed, how much carbolic acid should be contained in a given amount of the gauze, so as to have antiseptic effects, without producing toxic symptoms. Since the real amount of carbolic acid remaining in any gauze, after being prepared, could never be exactly guessed—simply because it continually evaporates—Dr. Kopff has instituted a series of experiments to terminate this uncertainty, with the following results:

1. Both Lister's gauze and Bruns' gauze, when removed from the steam-box in which they were prepared, showed a much lower percentage of carbolic acid than could have been expected from the amount originally used.

2. Bruns' gauze shows a higher percentage than Lister's, although equivalent quantities of acids were used in both cases.

3. The quantity of carbolic acid in any gauze diminishes constantly from day to day.

4. The evaporation of the acid is more or less rapid, in direct proportion to the care used in packing and preserving it.

5. The commercial gauze does not contain 12 per cent (as asserted) of carbolic acid.

6. Lister's gauze loses its acid more slowly than Bruns', although the latter contains a larger percentage of it in the beginning.

The method of examination consisted in preparing an aqueous solution of the carbolic acid contained in the gauze; precipitating this with bromine water and weighing the resulting tribromphenol. The following results were obtained.

	Kind of Gauze.	Age of Gauze.	Method of Packing.	Gauze Analyzed.	Yielded Tribromphenol.	= Carbolic acid.	Percentage of Carbolic Acid.
1.	*Lister's.*	2 days	In parchment paper.	5.0	0.463	0.1305	2.61
2.	Same, after	17 "	Well packed	1.5	0.123	0.0340	2.31
3.	"	32 "	In parchment paper.	3.0	0.118	0.0304	1.02
4.	"	33 "	Well packed	3.0	0.206	0.0580	1.93
5.	Another	1 day	In parchment paper.	5.0	0 227	0.0640	1.28
6.	"	5 days	Well packed	3.0	0.098	0.0276	0.92
7.	"	4 "	do.	2.0	0.123	0.0340	1.73
8.	"	57 "	do.	3.0	0.098	0.0276	0.92
9.	"	do.	do.	8.334	0.72	0.203	2.44
10.	"	tested at once.	do.	6 84	0.048	0.0136	0.198
11.	*Bruns'.*	1 day	do.	8.535	1.463	0.413	4.85
12.		do.	do.	5.412	1.078	0.304	5.62

One sample of gauze was extracted with hot water, alcohol and ether, then ether alone, and finally dried, when it was found to have lost 38.5 per cent in weight, corresponding to the quantity of paraffin, carbolic acid, resin, etc., removed therefrom.

NOTE BY EDITOR OF NEW REM.—Lister's carbolic gauze is prepared by impregnating muslin gauze with a hot mixture of carbolic acid, one part, resin five parts, and paraffin seven parts, and either exposing it to a moderate steam-heat in a hermetically closed box, or passing it, in several folds, between heated rollers. Bruns' modification con-

*The ignition should be conducted at as low a temperature as possible, since iodide of potassium is volatile at a bright red heat.—ED. NEW REM.

sists in dipping the muslin gauze into a solution of five parts of carbolic acid, twenty parts of resin, and two parts of castor oil in one hundred parts of alcohol, then removing it and hanging it up, in a horizontal position, to dry, which will take place in about half an hour.

In the public hospitals of the City of New York, Bruns' carbolic gauze is prepared by thoroughly soaking muslin gauze (so-called "Stillwater Muslin," having about thirty to thirty-six threads to the linear inch) in the before-mentioned mixture,* then passing the pieces, one after another, through the rollers of an ordinary cloth-wringer fastened over the tub or jar containing the solution, and afterwards spreading out each piece and swinging it a few minutes to and fro in the air, until it feels only just damp. It is then immediately folded up, wrapped in paraffin-paper, and put into tight metallic boxes until called for. In this way about five hundred yards of gauze may be prepared in two hours, and about five and a half gallons of the solution are soaked up and retained by it. It requires about ten gallons of the solution to dip and work up the five hundred yards; but about four and a half gallons of the solution will be left over for the next operation. Stillwater muslin costs, at present, four cents a yard, by the bale; hence five hundred yards of carbolized gauze will cost about thirty-five dollars, not counting labor or cost of wrapping.

Wine from the Greek Islands.

THERE is no part of the Greek countries, writes the correspondent of a contemporary, in which wine can be produced with the cheapness and alcoholic value of that of Crete. The oke of grapes (about two and three-quarter pounds) is worth at average prices twenty paras or one-half piaster, and one-half oke makes one oke of wine (three and one-fifth okes make a gallon), which sells, at the common exportation rates, for sixty paras, or one and one-half piaster (the piaster being approximately four cents). Of this the peasant must pay a tax of twenty-five per cent, or fifteen paras, as wine-tax, besides paying the tithe. Then for the Turkish provinces where it is sent there is an import duty of fifteen per cent. All these incumbrances so load the cultivator that, with the current price of wine—*i. e.*, £1 the hectoliter, delivered on board—there remains hardly a living price of sale for the grapes. As the fruit is mostly sold at the wine-press, the production is kept down to a very low point, being about three times the amount exported, or 180,000 hectoliters, while the capacity of production is stated to me by one of the most experienced wine manufacturers in the island at 100,000,000 okes, or 1,200,000 hectoliters. All this is of the quality now generally made, while much more land is available for lighter wines, which, if well cared for, might enter into competition with many wines of northern and western Europe.

The same remark, indeed, is true of many of the Greek islands. A careful French wine manufacturer has succeeded in making from the white grape of Ægina a wine scarcely to be distinguished from Vin de Graves. The French growers are entering largely into this trade through the whole Levant, and one has contracted for the entire raisin crop of Pythion at thirteen francs for one hundred okes for five years, being the price which would be realized from the turning of the grapes into raisins. These are items which will indicate to English enterprise a field to be worked, in which thus far only a few French manufacturers have ventured.

Detection of Alkalies in Nitrate of Silver.

THE salt is to be dissolved in the smallest possible quantity of water; the liquid is then to be filtered, and hydrofluosilicic acid added drop by drop. If this produces a turbidity, an alkaline salt is present. If the liquid remains limpid, it is to be mixed with an equal volume of alcohol, which will precipitate the slightest traces of alkali if present. —M. STOLBA in *Journ. de Pharm. et de Chim.*

* Recently it has been found that the gauze retains the carbolic acid longer and is more pliable, if the proportion of castor oil given above be doubled.

Notes from the Trade Report of the Chemical Works of E. Merck (Darmstadt).

Gynocardic Acid.—Like the oil of chaulmoogra (oleum gynocardiæ), this substance, which is regarded as the active principle of the oil, is used successfully in skin diseases, rheumatism, etc., etc., both internally, in form of pills, and externally, in form of salve.

Baptisin, pure.—The resinoid "baptisin" is used in the United States as a purgative and cholagogue. It is, however, uncertain in its effects, owing to the impurities present and its variable composition.

E. Merck now prepares a purified baptisin which represents the active constituents in the same proportion as they exist in the plant. It is a yellowish-white powder, almost tasteless, and easily soluble in diluted alcohol.

Colocynthin, pure.—Experiments made by Dr. Hiller, in the Charité at Berlin, have shown that perfectly pure colocynthin is a most excellent purgative, entirely devoid of the toxic and drastic effect produced by extract of colocynth. It is administered internally in doses of 0.1 to 0.4 *gm.* (1½ to 6 grains). As it is very soluble in water, it may also be used for hypodermic injections, in ten per cent solution, in doses of 0.1 to 0.3 *gm.* (1½ to 5 grains). It is a yellowish-white powder, of a purely bitter taste, easily soluble in water and alcohol.

Homatropine and Hyoscine.—Both of these alkaloids have become a staple article of demand. Their high price heretofore prevented their general use; but improvements in the mode of preparation have caused a considerable reduction.

Sulphate of Lobeline.—The effects of lobeline are closely allied to those of nicotine and coniine. The "pure" lobeline appears as a yellowish, semi-liquid mass, soluble in water, alcohol, and ether. The sulphate is in form of a pale yellowish-white, crystalline powder, and, owing to its easy solubility, is very suitable for hypodermic administration.

Papayotin.—Merck's preparation peptonizes, according to his own statement, two hundred times its own weight of fresh blood-fibrin (freed from excess of moisture by pressing with blotting-paper, and, therefore, representing pure meat). Other preparations found in the market under this name were found by Merck to possess not even the digestive power of the crude juice.

Sabbatin.—This glucoside, from Sabbatia Ellioti, is used as a substitute for quinine.

Crude German Drugs.

THE firm of M. Buddensieg, of Greussen, in Thuringia (Germany), which makes a specialty of the wholesale trade in crude vegetable drugs has issued its harvest-report for 1881, from which we take a few notes.

Arnica flowers have been collected and offered, as usually, in quantities largely exceeding the demand and are very low in price.

Belladonna leaves were brought in during June and July, in large amounts; but they were also in active demand. The collection was, however, interrupted by the long-continued rains beginning about the first of August. No crops coming in, prices have advanced and the demand could not be fully supplied.

Digitalis leaves have been collected very abundantly, causing their price to sink to a figure scarcely ever reached before.

Herba jaceæ (Viola tricolor) was gathered in considerable quantity and in fine condition, with the blue flowers attached.

Althæa Root and *Valerian R.* are abundant and much lower in price.

Anise Seed. The cultivation of this seed in Germany diminishes in extent every year, since the Russian seed costs only half as much. The quality of the latter is, however, far beneath that of the former.

From the price-list of the firm we quote the following figures:

	Per 100 kilos.	*Marks:*
Arnica flowers		70.
" " without calyx		110.
Calendula flowers, without calyx		135.
Digitalis leaves		52.50
Viola tricolor, best		68.
" " second		53.
" " best, cut		76.
Althæa root, select, very white, cut		122.
" " " half white, cut		89.50
Calamus root		37.
Gentian		56.50
Valerian, natural		43.
Anise seed, Thuringian		150.
" " Russian		76.

Natural Carlsbad Salt.

In consequence of numerous complaints against the commercial Carlsbad salt, which has consisted heretofore chiefly of sulphate of sodium, the magistrate of Carlsbad has ordered a change in its preparation, so that, hereafter, the commercial product will contain the whole of the salts of the natural water. The process is conducted as follows: The natural spring water is boiled and filtered off from the produced precipitate (containing silica, manganese, iron, calcium, and magnesium). The filtrate is evaporated, and the resulting saline mass, still containing water, saturated with the carbonic acid gas of the natural source. This causes the reconversion of the carbonates into bicarbonates. The percentage composition of the salt, which contains the constituents (with the exception of the abovementioned bases) in the proportions existing in the natural water, is stated to be :

Sodium bicarbonate	35.95	36.34
Lithium "	0.39	
Sodium sulphate	42.03	45.28
Potassium "	3.25	
Sodium chloride	18.16	
Sodium fluoride	0.09	
Sodium borate	0.07	
Silica	0.03	
Ferric oxide	0.01	

One liter of natural water yields about five and a half grams of salt. The latter is in form of a purely white, very fine powder, containing but a small amount of moisture and free from water of crystallization. When thrown into water it slightly cakes together at first, but dissolves afterwards quickly to a slightly opalescent liquid, having a saline and alkaline, not at all disagreeable taste; the sulphate of sodium being scarcely perceptible. When heated in a platinum capsule the salt does not melt until it has reached an incipient red heat and then separates a small quantity of black, infusible granules. On cooling, it congeals to a hard, porcelain-like mass.

Dr. Harnack, of Strassburg, who assigns no therapeutic value to any constituent except the chloride, sulphate, and bicarbonate, has found the salt to have the following composition:

Sodium bicarbonate	36.19
" chloride	17.28
" sulphate	46.09

He, therefore, recommends to prepare the artificial salt a follows:

Sodium sulphate	100 parts.
" bicarbonate	80 "
" chloride	40 "

To Clarify Liquors.

A good process is said to be the following: To each two gallons of the liquor add 150 grains of starch, 75 grains of dry egg-albumen, and 75 grains of sugar of milk previously macerated in a little water until the two last ingredients are dissolved. The liquors clarified by this method are said to become quite brilliant, and to acquire a pleasant taste.

The Preparation of Lactic Acid from Sugar.

Some time ago, Heinrich Kiliani, of Munich, published the results of some investigations concerning the production of lactic acid from sugars by the action of caustic alkalies. A new paper, by the same author, recently submitted to the German Chemical Society, contains further studies which are of sufficient interest and importance to be communicated here.

The author finds that the best material to start from is invert sugar. The ordinary commercial grape-sugar may be used, but gives a smaller yield than invert sugar.

The caustic alkali to be used in the process should be soda rather than potassa; first, on account of its greater cheapness, and second, because the finally resulting sulphate of sodium takes up most of the water produced in the reaction, as water of crystallization.

It is not advantageous to neutralize the whole alcoholic solution (obtained according to the process as designed by the author, and to be described directly) with carbonate of zinc, for the reason that the zinc salt of the acid produced alongside of lactic acid does either not crystallize at all, or at least with great difficulty, and that it at the same time diminishes the crystallizing power of lactate of zinc. On the other hand, the free acid itself does not have this disagreeable drawback.

The author has, on the basis of these results, modified the process previously proposed, and now proceeds as follows :

Five hundred grams* of cane-sugar are heated with 250 gm. of water and ten cubic centimeters of sulphuric acid (three parts of acid, four parts of water), in a stoppered flask of about two liters capacity, for three hours to 50° C. (122° F.). The resulting, colorless, or but faintly yellowish solution of invert sugar is mixed, after cooling, with 400 *cc.* of solution of soda (prepared by dissolving one part of caustic soda in one part of water), in portions of 50 *cc.* at a time. The soda solution settles to the bottom, particularly in the beginning, in form of a slimy mass, and a new portion is to be added only after the mixture has become homogeneous by agitation. During the addition of the lye the flask ought to be cooled off with cold water. The mixture soon becomes colored, and, if the lye is added too rapidly, the heat may become so great that the contents almost reach the boiling point. Although the yield does not appear to be impaired by such an occurrence, still the products become much darker than need be, and the final zinc salt is less pure. Finally the mixture is heated to 70°–80° C., until a sample, heated on the (boiling) water-bath with Fehling's solution, only imparts to the latter a green color without separating any cuprous oxide. After the mixture has become cold, the necessary quantity of sulphuric acid, consisting of a mixture of three parts of sulphuric acid and four parts of water, and the required quantity of which is previously ascertained by titration of the soda solution, is added. As soon as the acid liquid has cooled down to the temperature of the room, a crystal of sulphate of sodium is thrown in and the flask dipped into cold water, until a thin crystalline crust has been formed on the sides, which is to be detached by rapid agitation. Cooling and agitation are continued until crystals are no longer formed. If the mixture be then allowed to stand twelve or twenty-four hours longer, the contents of the flask appear as a crystalline cake saturated by a red liquid. Some 93% alcohol is now added, under shaking, until it ceases to produce a precipitate. The sulphate of sodium is separated by means of a filter-pump from the alcoholic solution, and can be washed completely with a comparatively small quantity of alcohol. One-half of the alcoholic solution is saturated, on the water-bath, with carbonate of zinc, the solution filtered boiling hot, and united with the other half. Crystallization usually begins immediately after cooling, and is completed after thirty-six hours. The resulting lactate of zinc may be so far freed, by aspiration and strong pressure, from the

* The author adds that the experiments were always conducted with this quantity, but that the process is applicable to *any* scale.

mother-liquor, that it may be obtained pure after being once recrystallized. (The air-dry salt was found to contain 18.34% H_2O; when dried at 110° C., 33.27% ZnO. The calculated quantities are, respectively, 18.18% H_2O and 33.33% ZnO.) The quantity of the first crystallization amounts to 30–40 per cent of the original weight of the sugar taken. From the mother-liquor a further quantity of the zinc salt may be obtained, which, after being once recrystallized, likewise yielded analytical figures of satisfactory agreement with the theory, though it was a little yellow. (Found: 18.25% H_2O and 33.17% ZnO.) If a sample of the mother-liquor from the second crystallization should yield free lactic acid to ether, when shaken with the latter, one-half of the mother-liquor should again be boiled with excess of carbonate of zinc, and the filtrate united with the other half of the liquor again allowed to crystallize.—*Ber. d. Deutsch. Chem. Ges.*, 1882, 699.

The Tartar Trade of Bordeaux, France.

BY U. S. CONSUL GEO. W. ROOSEVELT.*

If the people of the United States were to interest themselves sufficiently in the production of wine to supply the domestic market, another important and valuable article of commerce would be the natural product of their industry in that direction—viz., tartar.

There is no duty on the entry of crude tartar into the United States, and as but little is produced there, manufacturers of cream tartar, baking powders, etc., are compelled to import the greater part of their crude materials. Bordeaux is, perhaps, the most important centre of this trade, and dealers here employ the most approved methods, not only for obtaining the best results from barrels in which wine has lain for some time, but also for the extraction of every grain of tartar that settles to the bottom of the barrels with the wine dregs. A few hints concerning their method of procedure may be of value to those interested.

Of late years the supply of tartar has considerably decreased, owing to the reduction of the wine crop, and tartar can only form to a paying extent in barrels which are left undisturbed for a period of years. Indeed, the longer the wine remains in the barrels, the better and more abundant will be the tartar, which forms in a hard crystalline crust around the sides of the barrels, and is not produced if the wine is kept in other than wooden vessels. For instance, in many parts of Spain where the wine is stored in cisterns built in the earth and in the raw skins of hogs and other animals, no tartar is produced, though the same wine is found to be very rich in that article. A knowledge of the importance of the trade is now causing the Spaniards to adopt wooden casks more than formerly, and the wholesale exporters here who collect their supplies from all quarters where a few pounds are to be had, are beginning to draw considerable quantities from the southern side of the Pyrenees. Italy supplies a large amount of tartar for the Bordeaux market.

While the trade is not exactly a monopoly, there is only one firm here, Dreyfus Brothers, who control about four-fifths of the business, and have their agents in all wine districts, ready to pick up large or small lots of tartar, which are offered at a low rate in the local market. This firm sends an enormous quantity of argols to the United States each year. They were the first to introduce the system of extracting tartar from the settlings, which is done about as follows: There are usually from one to three inches of dark grounds found at the bottom of full barrels of new wine after they have stood long enough to settle, and about twenty-five per cent of tartar is naturally precipitated with these particles. After a certain time, the dregs are removed in a cake, dried, and broken up, till they are about the size of common sand and of a pinkish tinge, like the "tailings" of a Nevada quartz mill. These dregs are sold to tartar manufacturers for about five dollars a bushel. They are put into huge vats of hot water, and cooked for about two hours, when they are run off into shallow receivers, around which the crystals soon begin to form in a thick mass. As the water always holds a certain quantity of the tartar in solution, it is never allowed to escape, but is used over and over again in the boilers and settlers, thereby preventing a loss which must recur as frequently as the water was drained off, and which would largely diminish the profits of the business.

The factory of Messrs. Dreyfus turns out from one hundred and twenty to one hundred and thirty tons of "dreg crystals" every month, the dregs yielding on an average twenty per cent.

The manufacture of cream of tartar, tartaric acid, etc., is not extensively carried on here, most of the crude productions being bought in England and the United States. But the dealers in wine dregs now have a formidable rival in the field for the purchase of the supply in the person of the manufacturer of cheap brandies, who can afford to give a higher price for it, and has discovered that it imparts the wine flavor to a concocted brandy, which is one of the tests of quality.

Tartar which forms from wine that has been cleared with plaster is richest in tartaric acid, while that formed in wine that is cleared with eggs is richest in cream of tartar. The tartar takes the tinge of pink or cream, as the wine in which it forms is red or white.

The exports of this article from Bordeaux to the United States amounted to $1,001,446.41 in 1880, and $1,251,447.62 in 1881, showing an increase of $250,031.21.

* *Commercial Relations of the United States*, Washington, 1882.

Products obtained by the Roasting of Coffee.

BY O. BERNHEIMER.

Raw coffee beans (50 kg.) roasted in a revolving drum yielded a liquid distillate (5.1), and a solid portion (680 g.) floating thereon. The uncondensable vapors contained carbonic anhydride, and, on passing them through dilute hydrochloric acid, a resinous body was deposited having the aspect of pyrrol red.

A. *Liquid distillate.*—The crude liquid distillate filtered from solid particles had a yellow color and the fragrant odor of coffee. On agitating it with ether and evaporating the ethereal extract over the water-bath, a dark, heavy oil was obtained, smelling like coffee, and yielding, on redistillation, first a few drops of liquid having the odor of acetone, afterwards, for the most part, acetic acid and water. The thermometer then rose quickly to 200°, above which point there passed over an oil smelling like coffee, the temperature at the same time rising to 300°. Above this point, there passed over a very small quantity of liquid, which immediately solidified to a mass having the buttery aspect and rancid odor of the higher fatty acids. This portion, and the liquid which passed over from 200° to 300°, were neutralized with sodium carbonate, whereupon a thick, dark-colored oil was thrown down, which was separated from the supernatant liquid by means of a tap-funnel, and washed with water rendered very slightly alkaline by potash.

The alkaline wash-waters contained no fatty acids, but, when acidulated with sulphuric acid and agitated with ether, they yielded a substance which, after evaporation of the ether, filled the liquid with a pulp of crystals, and, after precipitation, crystallized in colorless needles, exhibiting the characters of quinol (m. p. 171°; conversion into quinhydrone by the action of ferric chloride).

The oil above mentioned, designated by the author as caffeol, was dried over calcium chloride and fractionally distilled, the greater part passing over from 195° to 197°. The distillate smells very strongly of coffee, is apparently insoluble in cold water, but imparts to it the characteristic odor; slightly soluble in hot water, very slightly in aqueous potash, very easily in alcohol and ether, the alcoholic solution giving, with ferric chloride, a red coloration which does not disappear on addition of sodium carbonate. Caffeol does not solidify in a freezing mixture. By analysis, it gave 69.57 and 69.77 per cent carbon, 7.77 and 7.73 hydrogen, leading to the formula $C_8H_{10}O_2$, which requires 69.56 C and 7.25 H. Its vapor density is by experiments 4.1, the formula requiring 4.7. Caffeol is

violently oxidized by chromic-acid mixture, without formation of any definite products. By fusion with potash, it yields salicylic acid.

The portion of the crude liquid distillate not taken up by ether, when concentrated over the water-bath, yielded groups of needle-shaped crystals, exhibiting the composition and properties of caffeine, $C_8H_{10}N_4O_2$ (0.28 per cent of the coffee). The mother liquid was found to contain methylamine and trimethylamine.

B. *Solid distillate.*—The black mass floating on the crude liquid distillate was found, by a preliminary examination, to consist of a mixture of the higher fatty acids. By saponification and treatment of the product by Heintz's method of separation, this mixture yielded, as chief constituent, palmitic acid melting at 60°, and a very small quantity of another acid having a melting point a few degrees higher than that of lauric acid.

Summary —From the preceding investigation, it appears that the chief products obtained by the roasting of coffee are palmitic acid, caffeine, caffeol, acetic acid, and carbonate anhydride; whilst, as secondary products, are obtained quinol, methylamine, pyrrol, and acetone (?). The fatty acids amount to 0.48 per cent of the coffee used, the caffeine to 0.18, and the caffeol to 0.05 per cent.—*Monatsh. d. Chem.*, 1, 456, and *Journ. Chem. Soc.*, Abstracts, 1882, 230.

Rapid Filtration of Oils or other Dense Liquids.

THE *Droguisten Zeitung* recommends for this purpose to attach to the exit of the funnel, by means of a rubber connection, a curved tube of glass or block-tin. The filter must be laid carefully in the funnel, so as to lie flat against the sides. If this is not the case, the suction of the siphon tube is apt to tear the filter. By selecting a shorter or a longer tube, the siphon may be made to act more or less rapid. The nature of the liquid to be filtered will determine the kind of tube to be selected. This simple contrivance accelerates the filtration about fourfold.

On the Presence of Furfurol in Fermented Liquids.

K. FOERSTER has published another communication (see NEW REM., 1882, page 181), bearing on the subject of Jorissen's test for fusel oil. He desired to ascertain whether the presence of furfurol in the fusel oil and in other products of fermentation is owing to the process of fermentation itself or to other causes. For this purpose, he made the following experiments.

300 *gm.* each of pure rock-candy and of glucose were allowed to ferment (under the usual conditions), the fermented masses filtered, most of the acid in the filtrate neutralized, and about two-thirds distilled off. The distillates had a faintly alkaline reaction, and contained traces of furfurol. Distillates from beers sold near the home of the author, as well as authentically pure wine likewise contained this substance, sometimes in considerable quantity. Even the fermented liquid itself (from 300 *gm.* of glucose), merely filtered and not distilled, contained it.

The detection of small quantities of furfurol is accomplished by extracting the liquid supposed to contain it two or three times with chloroform, evaporating the extract, in a warm place, to about 2 *cc.* in a capsule, dissolving the residue with about 10 *cc.* of absolute alcohol, and then mixing in a test-tube with ten drops of colorless aniline and three drops of pure hydrochloric acid.

Nevertheless, furfurol is not a product of the fermentation process itself. In the mass resulting from the fermentation of even large quantities of pure rock-candy, no furfurol can be detected *before* the distillation. That it is present in the products from the fermentation of glucose is simply caused by the fact that the commercial glucose already contains minute quantities of pyro-mucic aldehyde, evidently formed during the manufacture of the sugar.

How easily small quantities of the furfurol may be produced, is illustrated by the following examples.

On dissolving 100 *gm.* of pure rock-candy in 500 *gm.* of distilled water, with addition of 10 *gm.* of tartaric or lactic acid, and distilling off two-thirds, the distillate contains furfurol. A similar solution of sugar, without being distilled, but kept four or five hours, or longer, on the water-bath at a temperature of about 70° C. (158° F.), likewise contains furfurol. Even on exposing a similar solution for twelve days to an average temperature of 38° C. (100.4° F.), traces of furfurol were noticeable. In a 10 per cent sugar solution, however, at the last-named temperature, no formation of furfurol could be observed.

The presence of free acid is not at all necessary for the production of furfurol from cane-sugar. If 400 *cc.* are distilled off from a simple solution of rock-candy in 500 *gm.* of water, the distillate contains traces of furfurol. Further, on heating a solution of equal parts of rock-candy and water some time under an upright condenser, in a vessel so arranged that the sides of it cannot become overheated, the solution gradually assumes a yellowish color, and small quantities of furfurol are produced by the sugar combining with water.

It is, therefore, now easy to account for the presence of furfurol in crude spirits. During the distillation of fermented mashes, a mutual reaction takes place, at a high temperature, between free acid, still unfermented sugar, and other carbohydrates. While a small portion of the generated furfurol is already carried over with the vapors of ethyl alcohol, and thus passes into the crude spirit, the principal portion remains in the less volatile alcohols, particularly the fusel-oil, with which it shares nearly the same boiling point.

These results go to prove:

1. That all presumed detections of fusel oil based upon Jorissen's reaction are fallacious.

2. That we yet lack a fully reliable test for small quantities of amyl alcohol in fermented liquids or distillates.—After *Ber. d. Deutsch. Chem. Ges.*, 1882, 322.

On the Utilization of Palladium for the Absorption and Preparation of Hydrogen.

A. TSCHIRIKOW made the following experiment to test the applicability of palladium for the quantitative estimation of hydrogen gas given off in sealed tubes: 14.5 cubic centimetres of hydrochloric acid were introduced into a glass tube, next some glass-wool, and on top of the latter 0.551 *gm.* of zinc. A spiral of palladium fastened in a cork was then introduced, the glass-tube closed by fusion, and the zinc caused to fall into the acid by shaking. When, on the following day, the tube was opened with the necessary precautions, there was not only no pressure, but a portion of the hydrogen had also probably been united to water with some of the oxygen of the inclosed air. According to calculation, the pressure in the glass-tube should have amounted to twenty-five atmospheres (375 pounds to the square inch), and there must have been given off 187 cubic centimeters of hydrogen gas. Almost the whole of this quantity could be again driven out of the palladium spiral by heating to 350° C. (662° F.). The evolution of hydrogen from the compound Pd_2H takes place so uniformly on heating, that the author proposes to utilize palladium hydride as a source for preparing chemically pure hydrogen gas.—*J. d. Russ. Phys.-Chem. Gesellsch.*, 1882 (1), 47.

Richardson's New Anæsthetic.

ACCORDING to *The Lancet* (May 6th), Dr. Richardson uses either one of the two following mixturee:

1. Dichloromethane* [*Germ.* Methylen-chlorid, Methylen-bichlorid]..... 3 parts.
   Absolute ethyl alcohol..... 1 part.
2. Dichloromethane..... 10 parts.
   Absolute methyl alcohol..... 6 "

The second mixture, though somewhat weaker than the pure dichloromethane, is considered by Dr. Richardson as the "surest" ["sicherste;" safest?] of all known anæsthetics, provided the methyl alcohol is pure.

*See NEW REM., 1881, 235.

Cleaner for Bottles and Barrels.

A VERY ingenious instrument for effectually cleaning bottles and barrels which is made in all sizes, capable of being used in vessels of a capacity of one-half ounce and upward, is the property of the Rapid Barrel and Bottle Cleaning Company, 267 Broadway, New York City. Its use will do away with the danger attending the use of leaden shot, which, as is well known, are apt to become fixed in the groove at the bottom of some bottles and poison the future contents. The instrument consists of a series of metal balls attached to each other by links and inclosing in process of manufacture a number of bristle or wire brushes. At one end a rod is attached, to facilitate its introduction and removal from a vessel. Being introduced together with water or some suitable cleansing agent, shaking causes the brushes to penetrate every crevice of the vessel subjected to their action and insures a thorough cleansing.

New Bottle Cleaner.

On the Solubility of Glass in Certain Reagents.

BY RICHARD COWPER.

IN the course of certain analytical determinations, I was led to suspect that ammonium sulphide has a considerable solvent action on glass. As this is a point of great importance in analytical work, I have made the following experiments with a view to clear up the matter. 100 *cc.* of pure water of ammonia of specific gravity 0.88 was evaporated to dryness, and the residue ignited and weighed. It amounted to 0.0015 gram. Ammonium sulphide was made from this ammonia in the usual manner.

Experiments were then conducted in the following way:

A measured quantity of the reagent was sealed in a tube of hard Bohemian glass, and kept at 100° C. for six days.

It was then neutralized with hydrochloric acid, evaporated to dryness in a platinum dish, and the residue ignited and weighed.

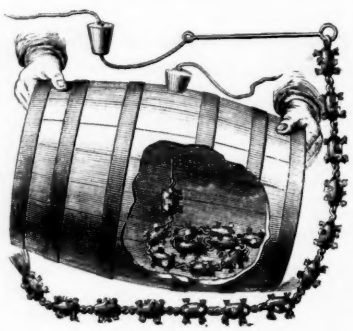
Experiments were made with various reagents besides ammonium sulphide.

The results are shown in the following table.

For purposes of comparison they are calculated on 100 *cc.* of the reagent employed.

The actual quantities employed were in Series A 60 *cc.*, in Series B 40 *cc.*

Reagents.		Mgrms. dissolved by 100 *cc.*	
		A.	B.
Water		8.0	10.0
Hydrosulph. acid.		12.5	8.7
Dilute ammon. sulphide.	Prepared from AmHO of spec. grav. 0.982.	49.6	52.5
Ammon sulphide concentrated.	Prepared from AmHO of spec. grav. 0.88.	34.0	47.2
Water of ammon. dilute.	Spec. grav. 0.982.....	25.8	42.5
Water of ammon. concentrated.	Spec. grav. 0.88.....	7.5	7.7
Ammon. hydrosulphide.	Prepared from AmHO of spec. grav. 0.982.	..	51.2



Barrel Cleaner.

These results show that whilst solution of ammonia of spec. grav. 0.88 scarcely attacks glass (the action not being greater than that exerted by water), dilute solution of ammonia, spec. grav. 0.982, attacks it very considerably. The concentrated ammonium sulphide attacks the glass to very nearly the same extent as the dilute solution of ammonia, and the dilute ammonium sulphide has more effect than the concentrated reagent.

The following experiment was then made: 60 *cc.* of the dilute ammonium sulphide was evaporated by boiling in a flask until all the sulphur was given off or deposited. It was then transferred to a porcelain crucible, evaporated to dryness, and ignited. The residue amounted to 0.008 gram.

Sixty *cc.* of the same ammonium sulphide, when neutralized with hydrochloric acid, and then evaporated to dryness, left only 0.001 gram.

This experiment shows that it is not admissible in analytical work to boil a solution of ammonium sulphide in a glass vessel even for a few minutes.

An analysis of some of the residue obtained in the above experiments was then made:

0.027 gram gave	0.0185 gram	silica.....	68 per cent.
	0.0024 "	lime.....	9 "
	0.0011 "	alumina....	4 "
	0.0052 "	NaCl, KCl.	19 "
			100 per cent.

A series of experiments was then made to determine at what degree of dilution the maximum effect on glass was produced by solutions of ammonia.

40 *cc.* taken.		Mgrms. dissolved.	Calculated in 100 *cc.*
Solution of ammonia..0.88 1 vol. / Water 1 vol.		9.0	22.5
do. 0.88 1 vol. / Water 2 vols.		10.5	26.2
do. 0.88 1 vol. / Water 3 vols.		12.0	30.0
do. 0.88 1 vol. / Water 4 vols.		10.7	26.7
do. 0.88 1 vol. / Water 5 vols.		16.5	41.2
do. 0.88 1 vol. / Water 6 vols.		12.8	32.0

From these experiments it appears that a dilute solution of ammonia, prepared by adding 5 vols. of water to 1 vol. of solution of ammonia of spec. grav. 0.88 (producing a solution having the spec. grav. 0.982), has the maximum effect.—*Journ. of the Chem. Soc.* (June), page 254.

New Method of Purifying Copper.

SUCCESSFUL experiments, described in the December number of the "*Comptes rendus*," have recently been made by M.J. Garnier, at the works of Messrs. Laveissière et Fils, Déville, near Rouen, with the purpose of removing arsenic and antimony in the commercial copper. From a theoretical stand-point the method now generally employed might be more satisfactory. The refining hearth is covered with silica, supposed to absorb the arsenic and antimony which are oxidized during the process, and to make them go into the slag. In reality this combination is formed very imperfectly, and an amount of two-one-thousandth of arsenic is considered sufficient to impair the quality of the copper. Mr. Garnier's process in some respects resembles the Thomas-Gilchrist process. He employs a sole of chalk and tar, over which, for each separate operation, he places a false sole of limestone and manganese peroxide. With the melting of the copper a generation of carbonic acid and oxygen begins from the upper sole, which oxidizes the charge. As soon as the metal is sufficiently liquid the lime and manganese protoxide rise and dissolve the arsenic acid. By this one operation the amount of arsenic, according to Mr. Garnier, is reduced to one-fifth. Subsequent fusions with basic fluxes are said almost completely to eliminate the arsenic. An analysis of a cement copper of Rio Tinto is added. Of 0.8 per cent of arsenic only 0.023 could be determined at the end of the third operation, the amount of iron contained being at the same time all but removed. No mention is made in this analysis of antimony. As special advantages of this system Mr. Garnier claims that the roasting of the black copper becomes unnecessary, and that the loss of copper, arising from parts of the copper combining with the silica of the slag, is avoided.

Note on a Fat Recently Extensively offered as an Adulterant for Lard.

BY JOHN MUTER, PH.D.

THIS fat (of which I exhibit a specimen) is in some respects peculiar. According to my analyses of several samples which I have had submitted to me by firms in the lard trade, anxious to know what it is, I find on an average the following result: (1.) It has an actual density at 100° F. of .9115 to .912. (2.) It yields on saponification 95.5 per cent of fatty acids, all insoluble. (3.) It is completely soluble in ether and in hot absolute alcohol. (4.) When melted and treated by my modification of Chateau's course, it gives reactions for cotton oil. A most striking fact is that, although nicely made to almost the exact consistence of lard at ordinary temperature, and not becoming perfectly fluid under 90° F., yet, after melting, it does not again solidify, but remains a yellow oil, having the distant odor of fine cotton salad oil, until it has been kept at 40° F. for some time, when it again resumes its original appearance. Its detection in lard is happily rendered simple by its high density and by the article not setting so solid as it was at first, after having been kept melted for the purpose of taking gravity. If added to "butterine" it makes the article softer and better looking in winter, and increases the density, but the high insoluble acids then serve to distinguish such a "butterine" from a mixture of fat and butter. Many recent "butterines" which on the density actually show a considerable amount of pure butter, have not a trace, but the error is due to the presence of this cotton "stearine."—*The Analyst*, June.

New Synthesis of Indigo.

PROF. BAEYER has found that in the formation of indigo from indoxyl—a hypothetical intermediate product assumed by him to be formed during the change of orthonitrophenylpropiolic acid to indigo-blue—a condensation of carbon takes place, which can only be explained by assuming indigo to have the composition:

$$C_6H_5--C\equiv\equiv C--C\equiv\equiv C--C_6H_5$$

and this compound is identical with diacetenylphenyl discovered by Glaser a number of years ago.

Prof. Baeyer found also that the orthonitrophenylpropiolic acid, which so far was the commercial form of artificial indigo (see the article in our February number, page 55) could be easily converted into orthonitro-phenyl-acetylen, and the latter quite as easily into ortho-dinitro-diphenyl-diacetylen: $C_6H_4 \begin{cases} C.C.C.C. \\ NO_2\ NO_2 \end{cases} C_6H_4$

The latter body, which crystallizes in golden needles, when treated with sulphuric acid and afterwards with fuming sulphuric acid in drops until dissolved, and finally dropped into cold alcohol, yields red needles, which were found to have the composition $C_{16}H_8N_2O_4$, and represent di-isatogen.

This body is of great interest, as it stands, of all artificial substances, nearest to indigo, and can be easily and completely converted into the latter. When moistened with sulphide of ammonium, for instance, even in the cold, it is at once completely turned to indigo.—*Ber. d. Deutsch. Chem. Ges.*, 1882, 50.

[The results obtained by Baeyer, while not actually constituting a new synthesis of indigo, nevertheless make it probable that an easier way will be discovered of arriving at di-isatogen, than that above mentioned.]

New Process for Preparing Atropine.

A. W. GERRARD gives the following process: 1,000 grams of powdered belladonna leaves or roots are put into a displacement apparatus, and macerated for twenty-four hours, with 1,000 cubic centimeters of 84 per cent alcohol. A fresh quantity of 250 parts of the alcohol is then added, and this is repeated four times, always after an interval of four hours. When all the liquid has run through, water is poured on top, in order to displace the alcoholic liquid still remaining. The alcohol is distilled off, and the residuary extract treated with five times its volume of water. The resin and fatty substances, which remain behind, are carefully washed with water, the aqueous solution evaporated to 300 *cc.*, and finally mixed with an excess of ammonia, which excess is allowed to gradually escape by exposing the mixture, in an open vessel, for some time to the air. The liquid is then agitated with an equal volume of ether, and the atropine separated from the ethereal solution by shaking it with a small volume of water containing a little acetic acid. In this way the whole of the atropine is soon extracted from the ether, which latter can be used over again. The solution of acetate of atropine is treated with animal charcoal, filtered, evaporated to a small volume, and again treated with ammonia and ether. Finally, from the ethereal solution, the atropine separates on evaporation, in very fine, almost white crystals. They may be obtained perfectly white by recrystallizing once or twice. It is of great importance to leave no alcohol in the extract, and to use only such ether which contains absolutely no alcohol. The author's experiments proved that the wild-growing contained more atropine than the cultivated plant, and the leaves more than the roots.—*Journ. de Ph. et Chim.*, 5, 158.

The Quantitative Separation of Rosin from Fats.

BY THOMAS S. GLADDING.

THE need of an accurate process for the separation of rosin from the fats and its quantitative estimation has long been felt. To meet this need, numerous methods have been proposed. Thus, in Prescott's "Proximate Organic Analysis," p. 90, are recommended two: the first dependent on the treatment of the fat acids containing the rosin with petroleum naptha; the second, on the treatment of the same with a mixture of water and a nearly equal volume of alcohol. I have given these plans a careful trial, using for the purpose a mixture of known amounts of pure fat and pure rosin, but have found them wholly unreliable, as they fail to give even an approximate determination of the rosin known to be present.

A later and better method is found in "Spon's Encyclopædia," p. 1,469, in which the rosin and fats are brought into the form of neutral soda salts. After a careful drying by evaporation mixed with sand, these are digested in a mixture of absolute alcohol and ether, by which the resinate of soda is dissolved. But this method is very laborious, requiring at a later stage the use of a polariscope, and even then giving a result several per cent from perfect accuracy, especially when the amount of rosin present is small.

The difficulty underlying the problem is the great similarity as regards solubility between oleic acid or its salts and the resins. Every solvent for the one in the above schemes is to a considerable degree a solvent for the other. A systematic search has therefore been made for such a salt and such a solvent as shall serve to distinctly separate these two substances.

A plan of separation, analogous to the separation of oleic acid from stearic and palmitic acids, by digesting their lead salts in ether, thereby dissolving out the oleate of lead, has been investigated, and found to be entirely satisfactory, both as regards accuracy and ease of execution.

The fatty salts of silver were found to be almost perfectly insoluble in ether, while the resinate of silver was found to be readily and abundantly soluble therein. A small percentage of alcohol does not affect the solubility of either, and for the sake of an advantage gained thereby was used in the course of experiments undertaken.

In applying this principle of separation, the silver salts of the three acids were at first precipitated from a perfectly neutral water solution of the potash salts by a neutral solution of silver nitrate. But the difficulty attending the filtering and washing of this precipitate, and the somewhat inaccurate results obtained, which were attributed partly to the decomposition of the silver salts from exposure during drying, preparatory to treating with ether, caused its abandonment.

The following plan was finally adopted with success: About 0.5 *gm.* of the fat acids containing the rosin is introduced into a small flask; 20 *cc.* of 95% alcohol are added, and the flask rotated till the fat acids and the resin are dissolved. A drop of phenol-phthalein is now added, and then a saturated solution of caustic potash in alcohol, drop by drop, with thorough agitation after the addition of each drop, until the deep-red color, characteristic of alkalinity, is obtained. One or two additional drops are now added, and the flask placed on a water-oven and kept at the temperature of boiling alcohol for ten minutes, to ensure the saponification of the last portions of the fat. The flask should be loosely corked. It is now cooled, and the contents washed into a graduated 100 *cc.* cylinder by means of concentrated ether. The cylinder is filled with the ether exactly to the 100 *cc.* mark, then corked (best by a common cork twisted tightly in), and the contents mixed by a moment's shaking. About 1 *gm.* of C. P. *neutral* silver nitrate is now rubbed to an impalpable powder in a small mortar, and then introduced into the cylinder. The latter is vigorously shaken for ten or fifteen minutes until the flocculent precipitate of silver stearate and oleate collects in the same manner as silver chloride upon shaking, and settles clear; 50 to 70 *cc.* of the supernatant liquid are now siphoned off by means of a slender siphon, previously filled with ether, into a second 100 *cc.* cylinder, passing the liquid through a small filter-paper if it is not perfectly clear. A small quantity of pulverized silver nitrate is shaken up with this, to make certain that all the oleate and stearate are precipitated. If no flocculent precipitate appears, this is the case; 20 *cc.* of a mixture of hydrochloric acid and water, one-third the former and two-thirds the latter, are now added, and the cylinder vigorously shaken until the decomposition of all the silver salt present is complete. After the silver chloride has settled, an aliquot portion of the supernatant ether solution is siphoned off into a platinum dish and evaporated on the top of a water-oven to dryness; the residue is rosin containing a small amount of oleic acid, which can be accurately allowed for.

The following experiments will show the allowance to be made for the oleate of silver retained in solution, as well as the reliance which can be placed upon the process for accuracy:

Exp. 1.—One-half *gm.* of pure fat acid was treated according to the above plan, but with one-half the amount of alcohol and ether.

Forty *cc.*, shaken with HCl and evaporated, gave 0.0095 *gm.* of residue. 10 *cc.* contain 0.00237 *gm.* of oleic acid.

Exp. 2.—One-half gram of pure fat acid was treated in the same way with full quantities of liquid.

Eighty *cc.*, shaken with HCl and evaporated, gave 0.0133 *gm.* of residue: 10 *cc.* contain, therefore, 0.00235 *gm.* of oleic acid. This very small and accurate correction of 0.00235 *gm.* for every 10 *cc.* of liquid, shaken up with HCl was applied in the subsequent experiments.

Exp. 3.—Some pure white Castile soap was decomposed by acid. One-half gram of the fat acids from the soap was added to 0.050 *gm.* of common yellow rosin (colophony), and the whole treated as above. After corrections, 0.0497 *gm.* on the whole quantity taken was obtained instead of 0.050 *gm.*

In order to ascertain whether the process would succeed with linseed oil, in which rosin is often to be determined, and also to test the process when very small quantities of rosin are present, the following experiment was made:

Exp. 4.—One-half gram of the fat acids from linseed oil was added to 0.050 *gm.* of rosin, and treated as the above.

Seventy *cc.*, shaken with HCl, gave 0.0517 *gm.* of residue. Subtracting the allowance for 70 *cc.*, namely, 0.0164 *gm.*, leaves 0.0353 *gm.*, or 0.0504 *gm.* of rosin on the whole quantity taken, instead of 0.050 *gm.* taken.

As the principal value of the above process will be found in the estimation of rosin in soaps, of which it forms so frequent an adulterant, a number of experiments were made according to the above plan on the soap itself, dispensing with the preliminary decomposition of the soap, in order to obtain the fat acids.

One gram of the soap in thin shavings is dissolved in the alcohol, and treated in every way as above. Particular care is paid to the saponification as above directed, in order to make certain that no trace of unsaponified fat is left. This would pass through the remaining stages unchanged and increase the percentage of rosin. The results are so good and the process is so much simplified that this plan is recommended for commercial analysis. The determination of the percentage of fat acids is thereby avoided, and the time required for the process is shortened to a few hours. Pure soap, free from rosin, was used.

	Soap taken.	Rosin added.	Rosin found after correction.
Exp. 5.—	0.250 *gm.*	0.0200 *gm.*	0.0197 *gm.*
Exp. 6.—	1.000 *gm.*	0.0200 *gm.*	0.0209 *gm.*

Some experiments made by filtering the whole of the liquid instead of taking an aliquot portion, as above, did not give as accurate results, both on account of the difficulty of perfectly washing the flocculent precipitate and the lesser degree of accuracy in making allowance for the oleate of silver dissolved.

Duplicate analyses of a cheap yellow soap known to contain rosin gave 29.00 per cent and 29.30 per cent of rosin present.

Some experiments to determine the applicability of the above process to the estimation of mineral oils and paraffin in the other fatty oils are contemplated; also a preliminary trial of a similar method of separating oleic acid from the other fat acids gives promise of accomplishing this with great accuracy.—*Chem. News*, April 14th.

A Good Cement for Glass.

A SOLUTION of bichromate of potassium and glue yields a superior cement for broken glassware. The moderately strong glue or gelatin solution is mixed, in a dark place or in a photographic dark-room, with a small amount of concentrated solution of bichromate of potassium. The edges of the fracture, which have been thoroughly cleaned, are then coated with a thin layer of the mixture, strongly pressed together, and kept close by tying with twine, or in some other manner. The glass is then exposed to sunlight for some hours. This causes the cement to become insoluble even in hot water.

On the Delicacy of Fleitmann's Reaction for Arsenic.

BY O. J. GRIFFIN.

DESIRING to ascertain a convenient and rapid method for determining the quantity of arsenic present in any solution or substance, I made comparative trials with Fleitmann's reaction upon solutions of arsenious acid, of different, but known strength with a view to find the least quantity of arsenic which would produce a visible reaction within a given time. The results are detailed in the following:

Fleitmann's Reaction.—If a strong solution of soda or potassa be heated with some pieces of pure zinc and a fragment of iron-wire, or some zinc and a drop or two of platinic chloride, or if it be mixed with some pieces of aluminium wire, it gives up an abundance of hydrogen gas. The reaction is generally expressed, say in the case of zinc, thus $Zn + 2NaHO = Na_2ZnO_2$ (zincate of sodium) $+ H_2$. In the presence of arsenic or any of its compounds the nascent hydrogen combines with it, forming arsenetted hydrogen. On the other hand, if antimony is present in the alkaline mixture of zinc and soda, the hydrogen refuses to combine with it. The test is, therefore, of great value both for the detection of arsenic and for its separation from antimony.

Experiments.—For the purpose of eliminating sources of error possibly due to variation of the quantities of the constituents of the reagent, all the experiments were conducted as follows: Into a five-inch test-tube, (1) one cubic centimeter of the arsenical solution was introduced, and afterwards five cubic centimeters of solution of sodic hydrate specific gravity 1.261. A pellet of pure absorbent cotton being laid ready to hand, and also a piece of filtering paper moistened with a 5% solution of argentic nitrate, one inch of aluminium wire cut in three pieces, was dropped into the test-tube, the pellet of cotton pushed down in the tube a short distance, and the mouth of the test-tube quickly covered with the moistened filter paper. The latter was covered with a second piece of filter paper, which was kept moist with drops of water, and never allowed to become quite dry. Both papers were held in place by a slender rubber band. The contents of the test-tube were not heated, but a uniform temperature of 15.5° C. was maintained throughout the experiments, and at the close of the experiment the inner filter was examined along its surface while still wet. The only varying factor in all the experiments was the arsenical solution, which was prepared by dissolving one gram of pure arsenious acid, previously dried at 100° C. (212° F.) in distilled water, with addition of some hydrochloric acid, and making up the solution to 1,000 cubic centimeters, at 15.5° C. (60° F.). One cubic centimeter of this solutions, therefore, contained 0.001 gram of arsenious acid. Successive dilutions were made of one volume of this solution and a definite number of volumes of water, and in each case one cubic centimeter of the diluted solution was employed for the test.

Results.—These are shown in the following table:

Amount of Arsenious Acid in Solution.	Result of Reaction on Filters.
0.001 gram.	Black in 2 minutes.
0.0005 "	" " 9 "
0.00025 "	" " 11 "
0.0002 "	Bluish black in 35 minutes.
0.0001667 "	No reaction in 35 "
0.000125 "	" " " 35 "
0.0000625 "	" " " 35 "

A greater length of time had no visible effect on the filter paper, nor did heating the mixture after it had been allowed to remain thirty-five minutes at 15.6° C. (60° F.) affect the paper any further.

Preparation of Succinic Acid from Tartaric Acid by Fermentation.

F. KOENIG showed, some time ago, that the chief product of the fermentation of ammonium tartrate, under the influence of bacteria, is succinic acid. He also found that the quantity of the latter produced varies greatly, according to the conditions, and that various quantities of acetic and formic acids are also formed. In a paper recently published, he gives the results of further studies, which are of great interest.

He found that no other volatile product except ammonium carbonate is formed in the process, and that the yield of succinic acid is very considerable, provided the solutions are not too dilute, and the process of fermentation passes off regularly without any considerable changes in temperature.

The best yield was obtained as follows: 2 kilograms of tartaric acid are dissolved in water, neutralized by ammonia, and diluted to 40 liters. Next are added solutions of 20 grams of calcium phosphate, 10 grams of magnesium sulphate, and a few grams of calcium chloride, and finally about 20 *cc.* of a solution of ammonium tartrate in process of fermentation, such as is easily obtained by diluting a portion of the above liquid with four times its volume of water and letting it stand. After a few days, it becomes cloudy, and is alive with bacteria. The mass is left to itself, air being excluded as much as possible, at a temperature of 25° to 30° C., until the feeble evolution of gas ceases, and no more tartaric acid is found in the liquid, which is the case after six to eight weeks. The liquid (which cannot be filtered) is now evaporated until the ammonium carbonate is dissipated, then clarified by white of egg, and, after being mixed with milk of lime, boiled until it has acquired a permanent alkaline reaction, and has lost the copiously formed ammonia. After cooling, the succinate of calcium is pressed, decomposed with sulphuric acid, and the succinic acid obtained and purified in the usual manner.

Two kilos of tartaric yield more than one-half kilo of succinic acid.

The process might be assumed to proceed so that 2 mol. of tartaric acid are split into 2 mol. of acetic acid, 2 mol. of carbon dioxide, and 2 mol. of hydrogen. which latter reduces a third molecule of tartaric to succinic acid.

$2C_4H_6O_6$ (tartaric acid.) $=$ $2C_2H_4O_2$ (acetic acid.) $+$ $5CO_2$ (carbon dioxide.) $+$ $2H_2$ (hydrogen.)

$C_4H_6O_6$ (tartaric acid.) $+$ $2H_2$ (hydrogen.) $=$ $C_4H_6O_4$ (succinic acid.) $+$ $2H_2O$ (water.)

According to this scheme, 2 kilos of tartaric would yield 524 *gm.* of succinic acid, which agrees with the practical yield. But the real process is much more complicated than the above reaction would indicate.

When using this process for manufacturing purposes, it is not necessary to use purified tartaric acid, but it may be directly made from the solution resulting by decomposing the calcium tartrate with sulphuric acid.—*Ber. d. Deutsch. Chem. Ges.*, 1882, 172.

Alkaloid Reactions, Especially those of Morphine.

BY R. HÜBNER.

AMONG the general alkaloidal reagents, the iodide of bismuth and potassium is undoubtedly the most delicate. The orange-red precipitate caused by it remains visible even in extreme dilutions, when observed on a plate of glass resting upon glossy black paper. Next in delicacy are iodide of cadmium and potassium, iodide of mercury and potassium, phosphomolybdic acid, and phosphotungstic acid, which are about equal in power. After these come platinic chloride, mercuric chloride, and the remainder.

Concerning the morphine reactions, the following hints will be useful, particularly when only very minute quantities are tested for:

1. The blood-red color caused by nitric acid may be overlooked if the liquid is stirred. The color is best observed by watching the surroundings of the single solid particles brought in contact with the acid.

2. The sulphuric acid reaction (with subsequent addition of nitric acid) is brought out most sharply if fifteen to twenty drops of sulphuric acid are poured upon the alkaloid, the mixture warmed until sulphuric acid begins to volatilize, then the mixture allowed to cool, and one drop of diluted nitric acid (1=20) now permitted to flow from the edge of the capsule. It may then be gradually mixed with the contents by cautious agitation.

3. To obtain the ferric chloride (blue color) reaction with certainty, only a very pale-yellow test-solution (five drops of the solution of ferric chloride to ten *cc.* of water) should be used, and this should be added only in drops. With each successive drop, the blue color becomes more intense, until an excess of ferric chloride has been added, when a false color makes its appearance.

4. The magnificent violet coloration of morphine produced by Froehde's reagent* is best observed if both are separately placed upon a flat watch-glass resting on a white surface, and the two brought gradually in contact, while being observed with a lens. This method is advisable, because the tint lasts scarcely one minute, and is brightest at the first moment.

5. The reaction with ferricyanide of potassium and ferric chloride requires greater caution in manipulation than any other, since it may easily lead to an erroneous conclusion.

A dilute solution of ferricyanide of potassium, mixed with a little ferric chloride, turns blue on addition of a drop of the solution of a salt of morphine, owing to the reduction of the ferricyanide to ferrocyanide (Otto). But this reduction and the blue color occur, even in the *absence* of morphine, if the mixture be exposed for a few minutes to ordinary daylight.

I prepared a mixture of ten *cc.* of distilled water, one drop of a solution of ferricyanide of potassium (1:10), and one drop of ferric chloride, free from ferrous salt, taken up by means of a thin glass rod. One-half of the pure yellow mixture was kept in the dark, the other half was put in the window, exposed to a clouded sky. While the former had retained its color after the lapse of one and a half hours, the latter assumed a greenish color already after a few minutes. This green color soon became darker, finally blue, and after ten minutes, a blue film had already deposited on the sides of the vessel. For this reason, the reaction for morphine by these reagents is reliable *only*, 1. If the solution of the ferricyanide is freshly prepared; 2. If the above-mentioned degree of dilution is observed (so as to have as faintly tinted a liquid as possible; and 3. If the test is performed rapidly.

One drop of solution of hydrochlorate of morphine, containing only one two-hundredths milligram of the salt, when allowed to run down from the edge of the vessel into the reagent, produced an unmistakable, decided reaction under these circumstances.—*Pharm. Zeit.*, No. 34.

* A freshly prepared solution of one to five milligrams of molybdate of sodium in one cubic centimeter of concentrated sulphuric acid.

Table of the Solubilities of Chemicals in Water, Alcohol, and Ether at 15° C. (59° F.), in Round Numbers.*

(From the new German Pharmacopœia.)

NAMES OF CHEMICALS (in the nomenclature current in the United States).	WATER.	ALCOHOL.	ETHER.
Acidum benzoicum	400	..	..
" boricum	30	6	.
" carbolicum	20	..	..
" citricum	1	1	50
" pyrogallicum	3	..	..
" salicylicum	600	..	..
" tannicum	5	2	..
" tartaricum	1	2	..
Alumen	12	..	..
" ustum	25	..	..
Aluminii sulphas	2	..	..
Ammonii carbonas	4	..	..
" chloridum	4	..	..
Antimonii et pot. tartras	17	..	..
Argenti nitras	1	12	..
Atropiæ sulphas	1	3	..
Auri et sodii chloridum	2	..	..
Bromum	40	..	..
Caffeinum	80	50	..
Codeinum	80	..	..
Cupri sulphas	4	..	..
Ferri lactas	50	..	..
" sulphas	2	.	..
Hydrargyri chloridum corros.	20	3	4
" iodidum rubrum	.	130	..
" cyanidum	10	10	..
Iodoformum	..	50	6
Iodum	..	10	..
Lithii carbonas	150	..	..
Magnesii sulphas	1	..	..
Mangani sulphas	2	..	..
Morphiæ hydrochloras	25	50	..
" sulphas	20	.	..
Physostigmiæ salicylas	150	12	..
Plumbi acetas	3	30	..
" iodidum	2000	..	..
Potassii acetas	0.5	2	..
" bicarbonas	4		..
" bitartras	200	..	..
" bromidum	2	200	..
" carbonas	1	..	..
" chloras	20	130	..
" iodidum	1	12	..
" et sodii tartras	2	..	..
" nitras	5	..	..
" permanganas	25	..	..
" sulphas	12	..	..
" tartras	2	.	..
Quiniæ bisulphas	12	35	..
" hydrochloras	40	4	..
" sulphas	800	90	..
Sodii acetas	3	30	..
" benzoas	2	..	..
" bicarbonas	15	..	..
" boras	18	..	..
" bromidum	2	5	..
" carbonas	2		..
" chloridum	3	..	..
" iodidum	1	3	..
" nitras	2	50	..
" phosphas	10	..	..
" salicylas	1	6	..
" sulphas	4		..
Saccharum	0.5	..	..
" lactis	7	..	..

* The text of the German Pharm. usually gives more exact figures. In this table, they are rounded off for practical purposes.

NAMES OF CHEMICALS. (in the nomenclature current in the United States).	WATER.	ALCOHOL.	ETHER.
Santoninum	5000	50	..
Strychniæ nitras	100	100	..
Tartarus boraxatus	1	.	..
Thymol	1200	1	..
Veratria	.	4	..
Zinci acetas	3	40	..
" sulphocarbolas	2	2	..
" sulphas	1	..	.

Assay of Cinchona Barks.

THE *Société de Pharmacie*, of Paris, has adopted the following processes for the assay of cinchona barks.

1. *Assay of Total Alkaloids in Gray and Red Barks.*

Mix 100 *gm.* of the finely powdered bark with 50 *gm.* of slaked lime, in powder, and moisten it gradually with 90 *cc.* of water, so as to form a soft paste. Let it macerate for twelve hours, dry on a water-bath, and exhaust the dry mass of all soluble matters by about 500 or 600 *gm.* of alcohol (90%), either by percolation or by washing. From the united liquids distil off the alcohol, and allow the liquid to cool. Treat the latter with water acidulated with sulphuric acid, and, when the liquid has a decidedly acid reaction, filter it.

Precipitate the filtrate by caustic soda in excess, taking care not to agitate the liquid too violently, but rather giving it a gentle rotation. Let it settle for several hours and decant. Wash the precipitate once or twice with about 100 *gm.* of water containing 4 *gm.* of caustic soda; finally throw it upon an unplaited filter, wash it with water gradually decreasing in alkalinity, dry, and weigh.

Gray bark, to be serviceable, should contain at least 1.5% of total alkaloids, and red barks at least 3%.

2. *Assay of Quinine in Yellow Bark.*

Mix 100 *gm.* of the finely powdered bark with 50 *gm.* of slaked lime, in powder, and moisten it gradually with 95 *cc.* of water to a rather thin mass. Let it macerate for twelve hours, then dry it on the water-bath.

Introduce the dry mass into a displacement apparatus, and extract it with 500 to 600 *gm.* of alcohol of 95%. When drops of the percolate no longer show a reaction for alkaloids, either by taste or with ammonia, and the bark is completely exhausted, transfer the whole percolate to a flask, and distil it on the bater-bath. Take up the half-cooled residue with about 30 *cc.* of dilute sulphuric acid (1 in 10), heat on the water-bath, to facilitate the solution of the alkaloids, decant, and repeat this operation with three or four fresh portions of the same acid. Filter these solutions, wash the filter with a little alcohol, and add to the filtrate an excess of solution of soda (sp. gr. 1.330) diluted with about twenty-five times its weight of water.

Collect the precipitate upon an unplaited filter, wash it carefully with water gradually decreasing in alkalinity, and finally, with a few cubic centimeters of water. Dry and weigh.

Now treat the precipitate with ether (sp. gr. 0.722), wash also the filter carefully, unite the ethereal liquids, evaporate, take up the residue with water acidulated with sulphuric acid, taking care that the final liquid has only a faintly acid reaction. Allow to crystallize, and consider the obtained crystals as *sulphate of quinine*. (In considering these as pure sulphate of quinine, the error caused by the solubility of the salt in the very faintly acid liquid is compensated.)

Collect the crystals upon a plain filter, wash them with a few drops of distilled water, dry, and weigh.

Yellow bark should yield at least two per cent of sulphate of quinine.—*Rép. de Pharm.*, 1882, 101.

On the True Coloring Matter of Litmus and on the Alkalinity of Potassium Monochromate.

BY M. RICHTER.

POTASSIUM monochromate (the yellow chromate) in solution reacts upon turmeric and litmus like an alkali. This fact is the more remarkable as it is a neutral, well-crystallized salt, and its behavior in other respects cannot be harmonized with alkalinity. This alkalinity may be explained either as due to a mechanical admixture, derived from the preparation of the salt, or to a peculiarity of a chemical nature, and essential to the existence of the compound or to the oxidizing action of chromic acid.

Of these three views, the third has been proved by the author, by means of very simple experiments. The first has been refuted by the following experiment:—Pure potassium monochromate was dissolved in water and precipitated with alcohol six times in succession, by which process any caustic alkali would be removed, since potassium hydroxide is soluble in alcohol. The salt, after being thus purified, reacted as before strongly alkaline. The alkalinity is, therefore, due only to the behavior of the chromic acid as an oxidizing agent. To determine this point, litmus, turmeric, and phenol-phthaleine were applied comparatively. The solution of the salt gave with the red color of the litmus a green mixed color, and with red litmus paper a blue-green. Turmeric tincture and paper were turned to a permanent dark red-brown. Solution of phenol-phthaleine and paper saturated therewith remained unaffected. But if a trace of alkali was added to the monochromate, the well-known intense red coloration of phenol-phthaleine was at once apparent. This indicator is decidedly preferable to the others

Herewith a proof is furnished that potassium monochromate does not exert an alkaline reaction in the first moment, as in this case the reaction of phenol-phthaleine would appear; but the alkalinity is first produced by the influence of the chromic acid upon the coloring-matter. The author advances here two suggestions, which both seem very hazardous, as further research is needed to give a positive result.

1. The chromic acid oxidizes the coloring matter so as to produce colored compounds.

2. In the oxidation of the coloring matter the chromate is decomposed, and caustic alkali is liberated, which acts upon the colors

The former hypothesis is preferable if the action of the chromate is kept in view. If red litmus paper is spotted with a solution of the chromate, it turns green at the edges. In other words, the chromic acid oxidizes the red color to a blue compound, which forms a green with the yellow color of the excess of the salt The blue litmus is, therefore, a product of the oxidation of the red, which must be regarded as the original coloring matter.

Another proof that the blue is a compound derived from the red is already known. If blue litmus solution is preserved in a close bottle, the liquid loses its blue color, and acquires a reddish tint. If poured upon a plate so that the air has everywhere access, the blue color is soon restored. The air exerts here, without doubt, an oxidizing action, though less rapid and energetic than that of chromic acid. —*Zeit. f. anal. Chem.* and *Chem. News.*

Recovery of Platinic Chloride and Ammonium Molybdate from Residues.*

1. *Platinic Chloride.* The waste liquors and residues produced by the estimation of potassium consist, *a* of the potassium platinic chloride remaining in the filters, and *b*, of the alcoholic wash-liquor which contains platinic chloride and its compounds with the chlorides of sodium, magnesium, barium, etc. If this solution be treated with potassium chloride, the platinum is precipitated as potassium platinic chloride, and if the latter compound be heated with alcohol, water, and sodium carbonate, there are produced: aldehyde, acetic acid, etc., and platinum black,

* DR. JUL. POST, *Chemisch-Technische Analyse*, Brannschweig, 1881, p. 536.

which latter may be completely purified by washing with water and hydrochloric acid. The practical execution of the process is described in the following:

To the alcoholic liquids contained in a flask, add as much saturated aqueous solution of potassium chloride as is required to completely precipitate the platinum present. Let the precipitate settle during twenty-four hours, siphon off the supernatant liquid, and wash the precipitate, by means of some of the removed liquid, into a porcelain capsule. Add thereto any potassium platinic chloride which may be contained in the old filters, boil the empty filters several times with water, and transfer the liquids to the contents of the capsule. Now add sodium carbonate to strong alkaline reaction, and set the capsule a few hours upon a steam-bath, occasionally stirring. When the platinum black has settled well and the supernatant liquid has only a pale-yellow color (due to organic substances), the liquid is passed through a filter, the platinum black washed by repeated portions of boiling water, dilute hydrochloric acid, and afterwards boiling concentrated nitric acid, finally by boiling water, until the filtrate ceases to give a reaction for chlorine. Dry the residue at the ordinary temperature (at a higher temperature the filter would be incinerated), and either keep it for future use, or convert it into platinic chloride in the usual manner.

2. *Ammonium Molybdate.* The acid liquids containing the molybdate are collected in a large flask (*A*), holding about 10 liters; the ammoniacal filtrates in a similar flask (*B*). The liquid contents of flask *A* are siphoned off clear, and evaporated to about 1 liter in a porcelain capsule heated on a water-bath* in the open air.

Almost the whole quantity of molybdic acid is thereby deposited in a crust firmly adhering to the capsule. When cold, the acid liquid is poured into a beaker, the crust of solid molybdic acid washed several times with water, the washings united with the acid, and the whole mixture set on one side (*C*). The ammoniacal liquid in flask *B* is now siphoned or filtered off, poured upon the crust in the porcelain capsule and the whole gently warmed until solution has taken place. The liquid is filtered and evaporated on the water-bath to the crystallizing point. The mother-liquid is separated from the crystallized ammonium molybdate, the crystals washed with a little water, which is added to the mother-liquor, and the liquids again concentrated so that a new crop of crystals may form. These are again washed with water, the last mother-water together with the washing are added to the residuary liquid (*C*) set aside. This is now precipitated by sodium phosphate and the yellow precipitate transferred to flask *B*.

The recovery of ammonium molybdate, by this simple method, entails only a very minute loss.

Ink.

PELTZ, in *Pharm. Zeitschr. f. Russl.*, recommends the following:

	Parts.
Extract of logwood	100
Lime-water	800
Carbolic acid	3
Common hydrochloric acid	25
Distilled water	600
Gum arabic	30
Bichromate of potassium	3
Distilled water, enough to make	1800

Dissolve the extract in the lime-water, in a porcelain or well-enamelled iron vessel, over a steam-bath, with frequent stirring. Add the carbolic and hydrochloric acids, which change the solution from a red to a brownish-yellow color. After half an hour's heating over the steam-bath, set the mixture aside until cold, then strain or filter. Now add the bichromate of potassium and the gum, each separately dissolved in a considerable quantity of distilled water, and finally add enough water to make 1800 parts.

This ink has a fine red color, which quickly turns black. It does not corrode steel pens, and, if it dries up, needs only the addition of water.

* Sand-bath or wire-gauze screen cannot be used, since they always cause the capsule to crack under the above circumstances.

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

Pharmaceutical Matters in Indiana.

EDITOR OF NEW REMEDIES:—

There is no doubt that you and the readers of your valuable paper ere this time are aware that a pharmaceutical association has been organized in the State of Indiana. The druggists of Indiana were about the last ones to organize an association for their own protection, and for the protection of the people; but when they went at it, they went at it with a good will, and with the only desire to make the Association perfect in all its parts, in which they have succeeded wonderfully. It was high time that something was done in this direction, for things here had come to a mighty fine state, imposters going under the name of druggists and pharmacists who had probably never seen the inside of a drug store, but only at the times they were making some minor purchases, were swarming this State, and the studious and professional pharmacist had to lay low and follow their dictations. As to what a fine point we came to may be explained by the following illustration. About three years ago, when I was in the southern part of this State, there came, one day, a young man fresh from the country, with a few dollars in his pocket, and purchased a rather nice stock of drugs which happened to be for sale, about one hundred feet from where I was located. He found a partner who was well posted in pharmacy, being a graduate of a medical college, and had attended lectures in New York and Europe; but the young man from the country could not agree with his partner, and as the partner had not sufficient means to purchase the whole stock, so in about four months the country boy bought it. Some day after that he came over to me with an ounce vial for some aqua fontana, which was prescribed with various other ingredients, saying that they had some before his partner left, but he did not know what had become of it. I filled his vial, telling him I would not charge him anything for it; but the next time he wanted it, it would cost him five cents. In a few days, the prescription was returned to be repeated, when he came after more, bringing a pint bottle to be filled. Then I told him what it was. He was perfectly surprised that there was such a big name for something as simple as that was, and many a time that when he would be out of one or the other tinctures, he would come to me and beg me to make it for him. His business career lasted about one year, when he sold out, being about three hundred dollars out of pocket.

There is no doubt that there are a good many in the same state all over Indiana; and now my fellow-druggists and pharmacists who are not members of the association yet, I ask you to join at its next session, and assist in elevating the position of the pharmacist in this State.

Respectfully,

H. J. I.

TERRE HAUTE, IND.

Rapid Process for Mercurial Ointment and for Powdering Ergot.

WHILE making Unguentum Hydrargyri, I found the following a rapid process:

Take of—

Mercury	24	troy ounces.
Cotton-seed oil	3	" "
Lard	9	" "
Suet	12	" "

Weigh the mercury and cotton-seed oil into a pint bottle; shake vigorously for five minutes, or until the globules of mercury are very small; add the mixture to three troy ounces of suet; rub until the globules cease to be visible; then add the remainder of the lard and suet, and mix thoroughly.

Powdering ergot in mortar or mill is a tedious operation; it can be comparatively easily accomplished in the following way:

Place sixteen troy ounces of ergot into a wide-mouth bottle; pour on it four fluid ounces of diluted alcohol, and cork securely. Let the bottle stand until all the alcohol is absorbed, standing the bottle on its cork occasionally so that the alcohol may be as near as possible equally distributed. When all is absorbed, powder in either mill or mortar.

H. T. EBERLE.

WATERTOWN, WIS.

No. 1063.—**Prescription Query** (G. B.).

This correspondent writes:

"The following prescription was left in my store to be dispensed. I promptly declined to dispense it without first consulting the physician who wrote it. Now I would ask if any pharmacist has the right to dispense such a prescription without taking this course of procedure.

"℞ Hydrarg. submur ..... ʒss i.
Aquæ calcis ..... fl. ʒiv.
M. S. Externally.

"I particularly draw your attention to the quantity of calomel contained in the prescription which is largely in excess of the quantity contained in the official Lotio Nigra of the Pharmacopœia."

In reply, we would say, *first*, that Lotio Nigra is *not* an official preparation of the United States Pharmacopœia. It is official, however, in the British and in the German. The proportions, in these, between the calomel and lime-water are as follows:

British Pharm.

	By weight.
Calomel ..... 30 grains	1 part.
Lime-water ..... 10 fl. ounces	146 parts.

German Pharm.

Calomel	1 part.
Lime-water	60 parts.

In both cases the calomel is still in excess, the lime-water being insufficient in quantity (even if saturated) to decompose all the calomel.

In the above prescription, only a very small amount of the calomel is reduced to black oxide. The rest remains undecomposed. The prescription being for external use, no fault could have been found with the apothecary in dispensing it, as it might have been quite possible that the physician was aware of the excess and intended to apply a dressing both of black oxide of mercury and of calomel.

If it had been or *was* convenient to refer to the prescriber, so as to acertain whether he may have miswritten 1 ʒ for 1 ℥, it might have been well to do so, but there was no obligation in the matter, seeing that the larger quantity could not do any harm.

No. 1064.—**The Analyst** (A. R. T.).

The title of this journal is: *The Analyst: Including the Proceedings of the "Society of Public Analysts,"* etc. Edited by G. W. Wigner and J. Muter: London. (Baillère, Tindall & Cox, King William Street, Strand, W. C. Communications to be addressed to this firm.)

No. 1065.—**Nitroglycerin** (Subscriber).

According to Berthelot (*Force de la poudre, etc.*, p. 160), the products of the explosion of nitroglycerin are:

$$2C_3H_5(NO_3)_3 = 6CO_2 + 5H_2O + 6N + O.$$

Hence, one volume of nitroglycerin produces 1135 vol. of gas at 100° C. (212° F.) and 760 *mm.* barom.—According to L'hôte (*Comptes Rend.*, 73, p. 1,013), 1 *gm.* of nitroglycerin furnishes 284 cubic centimetres of gas at 0° C. (32° F.) and 760 *mm.* pressure, consisting of 45.72% of carbonic oxide, 20.36% of nitric oxide, and 33.92% of nitrogen. This last decomposition is, however, defective for various reasons.

The best treatise containing an account of the manufacture of nitroglycerin which we can recall just now to our memory is: *Boeckmann: Die explosiven Stoffe.* 8vo. Wien (Hartleben). 5 marks.

No. 1066.—**Prescription Difficulty** (W.).

This correspondent has met with trouble in preparing the following prescription:

℞ Codeinæ ..... gr. viij.
Chloral ..... gr. xxxij.
Aquæ destillatæ ..... fl. ʒ ij.

The codeine was triturated with the water until dissolved, or, at least, until no more flocculi could be detected in the liquid. On now adding the chloral, the latter seemed to dissolve, but, at the same time, some of the codeine, or, possibly, a compound of codeine and chloral, again separated.

This prescription is quite a common one. We think the difficulty lies in the incomplete solution of the codeine in the water. That codeine forms a compound with chloral (such as camphor or salicylic acid form), is doubtful. At least, we have not been able to observe any while making a few experiments with the above mixture. To produce a perfect solution, the codeine should be converted into a soluble salt; and in the present case, this is quite legitimate, although not ordered in the preseription, since it is known that the physician requires a perfect solution. The most soluble salt of codeine is the tartrate, this being indeed so soluble that it can be obtained in a crystalline form only with great difficulty. The proportions should be such that an acid salt results, namely:

$C_{18}H_{21}NO_3.H_2O$	+	$C_4H_6O_6$
Codeine		Tartaric acid
317		150

or one part of tartaric acid for every two parts of codeine. The eight grains of codeine, in fine powder, should be added to a solution of four (or five) grains of tartaric acid in a *small* quantity of water (since a concentrated solution of tartaric acid dissolves the alkaloid more quickly). When solution has taken place, the chloral is dissolved in some of the water, the two solutions are mixed, and made up with water to two fluid ounces.

No. 1067.—**Balata or Gum Chicle or Bully-Tree Gum** (W. M. A., and others.)

The number of inquirers after the source, price, and markets of this article is constantly increasing. We have answered several inquiries before, and will do so once more, contenting ourselves with referring to the article on page 16 of our last January number, where we printed a report of the United States Consul, Wm. C. Burchard, (not Burhard) of Ruatan, Honduras, who offers information on the subject. The gum may be bought of Reed & Co., 44 Cedar street, New York. The price is about twenty cents a pound

No. 1068.—**Japanese Toothache Drops** (Subscriber).

The word "Japanese" in this connection is doubtlessly only a catch-word for the uninitiated. But, as usually prepared, the compound is undoubtedly useful in allaying toothache. F. Stearns & Co., of Detroit, who put up this article in an attractive style, use equal parts of: creasote, chloroform, oil of peppermint, oil of cloves, oil of camphor, and carbolic acid.

No. 1069.—**Elixir of Lactopeptin** (F. H. C.).

We cannot, of course, give you the exact formula of this elixir, as made by the firm you mention in your note. In the end, it makes but little difference what the other con-

stituents are, as long as there is a proper amount of pepsin and acid present. A good formula would be the following:

Lactopeptin	640 grains.
Lactic acid	1 fl. oz.
Glycerin	3 fl. ozs.
Water	6 "
Simple elixir	q. s. ad 32 "

Mix the ingredients and shake them together occasionally during twenty-four honrs, then filter.

Each teaspoonful contains two and a half grains of lactopeptin.

No. 1070.—**"Benson's Celery and Chamomile Pills."**

A correspondent desires to know the composition of this article Perhaps some of our readers may be able to answer the query.

No. 1071.—**St. Jacob's Oil** (See Query 1,023).

According to a note of Dr. C. D. Christman, of Wiconisto, received by us some time ago, the ingredients of St. Jacob's Oil are: oil of turpentine, oil of origanum, oil of rosemary, oil of lavender, and alcohol. The proportion of the ingredients is not stated by our correspondent.

Another correspondent states that since the label on the bottles of St. Jacob's Oil declares this to be the well-known German "Fichten-nadel Oel," this would appear to be identical with the so-called "fir-wool oil" or "fir-leaf oil" (on which see NEW REM., 1878, page 9). On the other hand, this identity is negatived by the statement of the manufacturers themselves (see NEW REM., 1880, 161), who acknowledge it to be a compound prepared by them.

Battle's Bromidia (correction).

The formula for bromidia given on page 189 of the June number contains an error, the water being double the quantity of what it should be. It should read:

℞ Potassii bromidi,	
Chloral hydratis	āā ʒ iv.
Extracti hyoscyami,	
Extracti cannabis indicæ	āā gr xvi.
Alcoholis	fl ʒ ij.
Aquæ	q. s. ad O. i.

No. 1072.—**Chrysarobin and Chrysophanic Acid** (M. M.).

These substances are not identical, and although prescribing physicians and manufacturing chemists generally use the name Chrysophanic acid, it is really Chrysarobin which is intended and furnished.

Chrysophanic acid is found in rhubarb, in Rumex obtusifolius, in Parmelia parietina, in various other species of Rheum and Rumex; also in Senna leaves. It may be obtained from rhubarb, by first exhausting this with water (which does not remove the substance in question); then extracting the residue with dilute solution of potassa, acidulating the clear liquid thus obtained with acetic acid, washing the precipitate with water, and crystallizing it, after drying, from boiling ligroin.

Chrysophanic acid may, however, be prepared in larger quantity by starting from chrysarobin, which is a peculiar substance, representing the active constituents of goa-powder. For this purpose, chrysarobin is treated, in a broad flask, with a considerable quantity of dilute solution of potassa; the liquid is then agitated by means of a current of air passed through it, until all the chrysarobin is dissolved, and the solution has assumed a uniform red color. The alkaline solution is then precipitated by an acid, and the precipitate purified as above. The commercial chrysarobin is not always quite pure and homogeneous; but when several times recrystallized from boiling benzol and glacial acetic acid, its composition becomes uniform, and the reaction may be expressed thus:

$$C_{30}H_{26}O_7 + 2O_2 = 2C_{15}H_{10}O_4 + 3H_2O.$$

Chrysarobin + Oxygen = Chrysophanic acid + Water.

No. 1073.—**Menyl** (J.).

Some years ago, a certain A. Nieske, of Dresden, formerly a barber by profession, made his appearance as "chemist" and manufacturer of a substance guaranteed to restore red noses to their normal color. This substance he termed "menyl," which looks somewhat like some of the modern chemical names, but means nothing whatever. On examination by the Board of Health of Stuttgart, it was found to consist of a solution of salicylic acid in alcohol and ether, mixed with soap-stone (steatite), and perfumed with oil of wintergreen. It is, therefore, a sort of paint, in which the soap-stone is the chief constituent. This may be able to cover the redness temporarily, but cannot remove it.

No. 1074.—**Boroglyceride** (S. J. C.).

Your inquiry was already answered, in advance of your letter, by the article published in our June number, entitled "A New Antiseptic," which see.

It is a new compound discovered by Prof. Barff, formed from glycerin and boracic (or boric) acid, which may be termed "borate of glyceryl," and which forms a hard, dry, translucent mass soluble in water. It is used as a preservative for food.

No. 1075.—**Kadsura** (Un.).

After some delay, we have ascertained that this is the name given by the Paris perfumer *Violet* to a new perfume derived from Japan. It is said to be obtained from a shrub indigenous to Japan and Java, bearing a large number of golden-yellow flowers, which emit a strong and very agreeable odor.

No. 1076.—**Cologne** (D.).

A very pleasant, simple, and readily prepared Cologne may be made by the following formula:

	Parts.
Oil of orange flowers (Neroli)	4
" lavender (Mitcham)	4
" rosemary	8
" lemon	8
" bergamot	16
Tincture of musk	1
Acetic ether	1
Water	158
Alcohol	800

Add the oils, tincture of musk, and acetic ether to the alcohol; then add the water, and set the mixture aside, in glass-stoppered bottles, until it has become perfectly clear and limpid. Draw off the clear liquid, or filter it through paper.

A very superior Cologne may also be prepared thus:

Oil of orange flowers (Neroli), petale	3 oz.
" " " " bigarade	1 "
" rosemary	2 "
" orange, bitter	5 "
" lemon	5 "
" bergamot	2 "
Alcohol, deodorized	6 gall.
Water, distilled	q. s.

Dissolve the oils in the alcohol; to five gallons of the mixture add slowly and while stirring, enough distilled water to render the liquid very slightly opaque. Then add the reserved gallon, which should render the liquid clear again, and set the mixture aside for several weeks. Finally filter.

No. 1077.—**Latin Labels** (Julien).

Our correspondent desires, for uniformity's sake, to have Latin Labels for "London Purple" and for "Ultramarin," both of which he keeps in one-half gallon glass jars. He also states that he has "Ace. Cupr. Arsen." for Paris green.

Regarding the last-named substance, which is an "aceto-arsenite of copper," and the Latin name of which would be "Cupri Aceto-Arsenis," or "Cuprum Aceto-Arsenosum," we would prefer the abbreviation: "Cupr. Acet.-Arsen." As to the other two substances, London Purple can be translated, without hesitation: "Purpura Londinensis," since *purpura* can designate both the abstract and the concrete color. Ultramarin has already been Latinized simply as "Ultramarinum."

BIBLIOGRAPHY.

CATALOGUE OF THE MASSACHUSETTS COLLEGE OF PHARMACY. 1882–1883. 8vo. Boston, 1882.

UNTERSUCHUNGEN EINES AUS WEST-AFRIKA STAMMENDEN FISCHGIFTES. Inaug.-Dissert. von CARL THOMSON. 8vo. Dorpat, 1882.

THE poison is in form of the cut sections of the stem of a plant, probably *Tephrosia ichthyonea* Bertol. or *Tephrosia piscatoria* Cersoon. Its action is energetic upon fishes, but not upon frogs (except in very large doses). An aqueous extract of 10 *gm.* did not affect cats. The active constituent may be isolated by extracting with petroleum ether, making a watery extract from the residue left on evaporating the petroleum ether, and again extracting the watery extract with petroleum ether. The active principle is soluble in water, alcohol, ether, chloroform, and petroleum ether. It is not an alkaloid nor a glucoside, and contains no nitrogen.

CHEMISCHE ANALYSE DER BLÄTTER DES MEMECYLON TINCTORIUM WILLD. Von PROF. G. DRAGENDORFF.

DER FORENSISCHE NACHWEIS DER QUEBRACHO UND PEREIRO-ALKALOIDE IN THIERISCHEN FLÜSSIGKEITEN UND GEWEBEN, MIT BERÜCKSICHTIGUNG IHRER UNTERSCHEIDUNG VON DEN STRYCHNOS-ALKALOIDEN. Inaug.-Dissert. von EDUARD CZERNIEWSKI. 8vo. Dorpat, 1882.

(AN abstract will be communicated elsewhere.)

CHEMISCHE UNTERSUCHUNG DES TANACETUM VULGARE. Inaug.-Dissert. von OSCAR LEPPIG. Dorpat. 8vo. 1882.

THE four preceding dissertations have been received from Prof. Dr. G. Dragendorff.

CALENDAR OF THE UNIVERSITY OF MICHIGAN FOR 1881–2. 8vo. Ann Arbor, 1882

A PRACTICAL TREATISE ON DISEASES OF THE SKIN. By LOUIS A. DUHRING, M.D., Professor of Diseases of the Skin in the Hospital of the University of Pennsylvania, etc. Third edition, Revised and Enlarged. Philadelphia: J. B. Lippincott & Co., 1882, pp. 685, 8vo.

WE have before mentioned the unusual excellence of this text-book, and now call attention to the publication (within a year) of a new edition to which the author has added, here and there, matter which the advances in histology and therapeutics, and his own experience would justify. No better guide to the treatment of skin diseases can be had at present than this work by Professor Duhring.

A COMPLETE LIST OF MINERAL WATERS, FOREIGN AND DOMESTIC, with their Analyses, Uses, and Sources. By P. SCHERER & Co., Importers, New York, pp. 59, 8vo. 50 cents.

ALTHOUGH the mineral waters mentioned in this work (about sixty) do not embrace all which are reputed to have valuable medicinal properties, they are the ones to be commonly met with in the trade, the others having mostly to be taken at their source. In the case of most persons a visit to the spring itself is usually out of the question and it becomes a matter of considerable importance to physicians to know what waters *can* be procured in portable packages, and where they may be had in the best condition possible.

In the preface Messrs. Scherer & Co. call attention to the importance of using mineral waters that have not too long been bottled, and say that they are accustomed to keep their stock supplied by recent importation.

THE VEST-POCKET ANATOMIST (Founded upon "Gray.") By C. HENRI LEONARD, A.M, M.D. Eleventh Revised Edition. Detroit: Illustrated Med. Journ. Co., 1882, pp. 83, 12mo. 75 cents.

THE present edition of this handy book for students has been enlarged by the addition of matter relating to the anatomical triangles and spaces, hernia, gynecological anatomy, etc.

NEW PATENTS.

[*Complete specifications and illustrations may be obtained of any one or more of the following patents by sending the number, title, name of patentee, and date of issue, with twenty-five cents for each copy, to the Commissioner of Patents, at Washington, D. C., together with the name and address of the person requesting the same.*]

253,802. *Apparatus for Making Extracts from Vegetable Substances.*—Morris Wise, New York, N. Y., assignor to the West India Manufacturing Co., same place.

253,990. *Apparatus for Fractional Distillation.*—Ern. F. Dietrichs, Cleveland, O.

253,042. *Kneading and Mixing Machine.*—Paul Pflei derer, Norwood, County of Surrey, England. Patented in England Dec. 16th, 1878, in France, June 28th, 1879, in Belgium, July 7th, 1879; in Austria, Nov. 11th, 1879; in Italy, Jan. 31st, 1880; and in Germany, Aug. 13th, 1880

264,096. *Medical Compound.*—Wilhelm Pickhardt, New York, N. Y., and Hermann Endemann, Brooklyn, N. Y., assignors to Wilhelm Pickhardt and Adolf Kuttroff, both of New York, N. Y. The improvement consists in the separation of impurities from commercial chinoline, and conversion of the latter into an acid tartrate of that base.

254,097. *Idem.*—The compound produced is the hydrochlorate of chinoline purified from the presence of associated bases.

254,176. *Apparatus for Distilling Petroleum.*—Charles J. Tagliabue, Brooklyn, N. Y.

254,186. *Hydrogen-Gas Generator.*—Alex. Berland, St. Petersburg, Russia.

254,263. *Compound for Etching Vitreous Surfaces.*—Paul Bitterlin, Jr., Paris, France. Patented in France January 21st, 1880 A compound for varying the etched surface of glass, consisting of hydrofluoric acid, mixed with a finely-divided material which the acid will not attack.

254,317. *Insecticide for Poultry, Nests, Etc.*—Erwin D. Hill, Marietta, O. Composed of plaster of Paris, corrosive sublimate, lard-oil, and white precipitate, or the equivalents of the latter two ingredients—viz., red precipitate and linseed oil.

254,345. *Bottle-Stopper Attachment*—Benj. B. Lewis, Lewis, West Stratford, Ct.

254,356 *Medical Compound.*—Wm. R. Mead, Fowlerville, Mich. A medical compound for the treatment of epilepsy, composed of tincture of nux vomica, bromide of ammonia, bromide of potash, bicarbonate of potash, tincture of columbo, and distilled water mixed in about the proportions specified.

254,384. *Medicinal Tonic.* Lena Rouden, Louisville, Ky. Unites one quart of wine, or other desired liquor, with one teacupful of strong infusion of wahoo bark, one-third the amount of infusion of valerian, and same amount of infusion of golden seal. The teas are of the strength of two ounces to a pint of water.

254,391. *Inhaler.*—William F. Semple, Mount Vernon, Ohio.

254,424. *Apparatus for the Continuous Production of Ozone.*—Theodore J. Yost, Mahwa, N. J.

254,448. *Medical Compound.*—Jacinto Averhoff, Havana, Cuba. To gum frankincense, gum myrrh, and gum mastic, one-half ounce each, and Socotrine aloes, one and one-half ounces, add twenty-four ounces of alcohol, to be used as an embrocation.

254,457. *Speculum.*—John E. Caps, Cincinnati, Ohio.

254,502. *Automatic Weighing Scale.*—Frank D. Payn, Albany, N. Y.

254,579. *Urethral Syringe.*—Franz Wilhöft, New York, N. Y.

254,718. *Stopper for Bottles Jars, etc.*—George A. Smyth, Newport, R. I. In combination with the bottle or jar *B*, the blown stopper *A*, ground to fit said jar and

provided with an interior chamber containing filtering material, and having an upper and lower openings, whereby vapor can pass from or air into the interior of the jar without allowing the admission of germs of decay.

254,724. *Collyrium.*—Absalom Templeton, Round Rock, assignor of one-half to Daniel Spillars Page, Williamson County, Texas. Unites with one quart of rain-water, one teacupful of honey, one teaspoonful and a half verdigris (*cupric acetate*), one teaspoonful of borax, and ten grains of morphia. After standing twenty-four hours the mixture is filtered.

254,726. *Filter-Stand.*—Henry B. Tiffany, Clyde, O. The main frame *B*, having the rings or funnel supports *c*, and the hinged legs *A A*, in combination with the rod H, bent to form the braces *L L*, and the sliding sleeves *k*.

254,760. *Dose-Cup Bottle-Stopper.*—J. Henry Zeilin, Philadelphia, Pa. A dose-cup provided with a corkscrew at its bottom, whereby it may be attached to the outer end of the cork stopper of a bottle.

254,789. *Galvanic Belt.*—Arthur A. Baldwin, Ionia, Mich.

254,799. *Suspensory Bandage.*—John Codman, Boston, Mass.

254,832. *Neutral Potash Soap.*—William J. Menzies, Saint Helen's, County of Lancaster, England.

254,838. *Medicine Chest and Case.*—Hyla H. Peacock, Philadelphia, Pa In a case for holding vials for dispensing medicines, clasping springs attached to the back of such case adapted to hold the sides of the vials and display the fronts thereof, in combination with springs placed beneath the vials and adapted to press them upward upon the stoppers.

254,865. *Truss.*—Charles Cluthe, Toronto, Ontario, Canada. The entire pad is formed of a coil of wire so flattened and arranged that it may rest directly upon the flesh without an intervening curving.

254,918 and 254,919. *Purification of Alkaline Solutions.*—Eustace Carey, Holbrook Gaskell, Jr., and Ferdinand Hurter, County Lancaster, England. Patented in England, July 18th, 1879.

254,930. *Ozone Generator.*—John M. Davidson, New York, N. Y.

254,988. *Atomizer.*—Paul Lochmann, Schkendits, Prussia, Germany.

255,070. *Manufacture of Soap-Powder and Apparatus therefor.*—William Wright, Duylsden, and Thomas Bintliff, Manchester, County of Lancaster, England. Said Bintliff assignor to said Wright. Patented in England, September 17th, 1878.

255,132. *Liquid Measure and Scales.*—Charles E. Becker and Philip Jacob, Chicago, Ill.

255,756. *Speculum*—William Autenrieth, Cincinnati, Ohio, and Joseph M. Thurston, Hagerstown, Ind.

255,829. *Machine for Cutting off Capsules.*—William J. Wohnlich and Richard J Scholes, Detroit, Mich., assignors to said Scholes, William McFarland, and Andrew McFarland, all of same place.

255,883. *Insecticide Compound.*—William B. Nettle, Steward's Mills, Tex. Composed of bisulphide of carbon, sulphur and sulphydric acid.

256,129. *Tonic Beverage.*—Jacob W. Decastro, Mahwa, N. J. Condensed milk charged with carbonic acid and kept under pressure.

256,193. *Tumbler-Washer.*—Wallace H. Bate, Boston, assignor to James W. Tufts, Medford, Mass.

256,400. *Production of Naphthyl Sulphate Soda Salt.*—James N. Stebbins, Jr., New York, N. Y.

256,419. *Process of and Apparatus for Making Pills.*—James A. Whitney, Dobb's Ferry, N. Y.

255,900. *Cushion Protector for Bottles.*—James M. Thorpe, San Jose, Cal., assignor of one-half to Joseph A. Beloli, same place. A friable vessel provided with two sets or series of groves *a a'* in combination with adjustable elastic rings *b b'* fitting in said groves.

256,095. *Method of Putting up Caustic Alkali.*—Benjamin T. Babbitt, New York, N. Y. Improvement consists in subjecting the cans to artificial cooling during the operation to filling them with melted alkali.

10,069 (Reissue). *Bottle-Wrapper.*—Henry J. Mark and William F. Martinek, St. Louis, Mo., assignors to Mark and Martinek Manufacturing Co., same place.

256,423. *Weighing Scales.*—Walter W. Wright, Cairo, Ill.

256,444. *Salicylate of Chinoline.*—Wilhelm Pickhard, New York, and Hermann Endemann, Brooklyn, assignor to said Pickhardt and Adolf Kuttroff, New York, N. Y.

256,445. *Benzoate of Chinoline.*—(Idem.)

256,495. *Inhaler.*—John H. Nelson, North East, Pa.

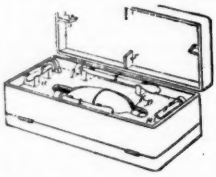
256,504. *Percolator.*—Nathan Rosenwasser, Cleveland, Ohio.

256,573. *Machine for Making Pills, Lozenges, etc.*—John T. Jones and Charles T. Jones, Utica, N. Y.

156,590. *Double Catheter.*—Edward Pfarre, Brooklyn, N. Y. The catheter of soft rubber, having a smooth exterior surface and of uniform diameter, or nearly so, and formed as a single tube at one end for the reception of the syringe, and the remainder of the instrument divided into two tubes, one of which forms the injecting-duct running to the point of the instrument, or nearly so, and the other the discharge-tube *a*, terminating at the back end within the main tube, and having the eyes *e* and *f*.

256,613 and 256,614. *Process of Extracting Glycerin and Apparatus therefor.*—Benjamin T. Babbitt, New York, N. Y.

256,621. *Atomizer.*—James Beggs, Paterson, N. J.



256,716. *Syringe-Box.*—Thomas F. Matthews, New York, N. Y. An invertible syringe-box having hinged covers forming two of its opposite sides, an intermediate fixed partition converting the box into two compartments, one of which is adapted to hold a syringe and the other a set of pipes therefor, clamps on one of the covers, adapted to hold the pipes in place in their compartment when said cover forms the bottom of the box, and an aperture in said partition, which serves as a guide by which to place a syringe in one compartment and permit a part of the syringe to be seen through the other compartment when the box is inverted.

256,745. *Apparatus for Administering Injection.*—Peter V. Schenck, St. Louis, Mo.

256,768. *Pendulum-Scales.*—Rosendo Torras, Brunswick, Ga.

256,832. *Manufacture of Baking Powder.*—Adolph Grisecke, Buffalo, N. Y. A combination of phosphate of soda and muriatic acid.

256,847. *Salve.*—John Mayer, Holly Springs, Miss. Consists of red-oak bark, tobacco, lard and beeswax, combined with rosin.

257,029. *Medical Compound.*—Peter R. Livings, Rockford, Ill. Prepared from water, poplar-bark, wild-cherry bark, prickly-ash bark, dandelion root, May-apple root, Indian turnip root, and hops.

257,062. *Cork-Screw.*—Harry L. Perryman, Lincoln, Neb.

257,136. *Combined Label Guide-Slip and Wrapper for Bottles.*—John Livor, New York, N.Y., assignor, by mesne assignments, to Mahala A. Livor, same place. In combination with a bottle, a label guide-slip, and wrapper, the guide-slip consisting of a strip of paper or other fabric having a printed label at one end, and the remaining portion of the slip containing instructions, the label end of the guide-slip being attached to the bottle and the remaining portion of the slip left free and adapted to be wrapped around the bottle.

247,421. *Measure for Liquids.*—Frederick Weber, Brooklyn, N. Y.

ITEMS.

Exhibition of the American Pharmaceutical Association.

MANUFACTURERS of pharmaceutical products or specialties, and mechanical or interesting novelties in the allied branches, are invited to exhibit their productions at the next meeting of the American Pharmaceutical Association, at Niagara Falls, commencing Tuesday, September 12th, and adjourning Friday or Saturday, September 15th or 16th—a period of five days.

It is needless to state that it will be the largest meeting of pharmacists ever held in the United States since the formation of the Associction, which has a membership of quite 1,400, representing every section of the United States and Canada.

The exhibition will be held at the pavilion in Prospect Park The park has been specially engaged by the Association, and will be, during the meeting, its chief attraction.

The customary charge will be made for counter or floor space, as heretofore ; it will be a small item. The dimension of the exhibition room is 42x75 feet, and the hall is an exceptionally fine one for the purpose. Counter space will be four feet wide. All space will be divided into allotments of 10 and 6 feet front by the table widths of 4 feet.

A prompt application will insure you a good position. All communications referring to space will receive immediate attention. Diagram of space shown. All goods, in order to be properly taken care of, should be addressed, prior to the meeting, to your representatives in charge, or to

Yours very truly,
HIRAM E. GRIFFITH,
NIAGARA FALLS, N. Y. *Local Sec'y A. P. A.*

P. S.—Exhibits taken charge of, if desired.

Notice to Local Pharmaceutical Associations.

THE undersigned respectfully requests the *Secretary* of each *Local Pharmaceutical Association* in the United States and Canada to send the title of the organization, names of President and Secretary, number of members, and time of meeting to him by mail at the earliest opportunity.

Such a response will be considered a personal favor.

P. W. BEDFORD,
President American Pharm. Ass.

N. Y., June 20th, 1882.
P. O Box 1738.

The Middlemore Prize in Ophthalmology.—We are requested to remind intending competitors for this prize that all essays must be forwarded by the 31st of May next, under cover, with a sealed envelope bearing the motto of the essay, and containing the name and address of the author, addressed to the General Secretary of the British Medical Association, 161A, Strand, London. The amount of the prize is £50, and the subject of the essay is "The Scientific and Practical Value of Improvements in Ophthalmological Medicine and Surgery made or published in the past three years."

Massachusetts College of Pharmacy.—At the last annual meeting of the Massachusetts College of Pharmacy, held at College Hall, the President, Mr. Solomon Carter, presiding, the several committees reported the College advancing prosperously, and the Treasurer's report showed that the College was in a good condition financially. A unanimous vote of thanks was tendered Mr. Thomas Doliber for the able and efficient manner in which he had performed the duties of Treasurer.

Prof. Geo. F. H. Markoe, who has been Corresponding Secretary for the past sixteen years, read his report, and, declining a re-election, it was voted unanimously that the thanks of the College be tendered him for the faithful manner in which he had attended to the duties of Corresponding Secretary.

It was voted that the Board of Trustees shall set aside a sum not less than three hundred dollars a year for the Building Fund.

On the recommendation of the Board of Trustees, a committee of three were appointed by the Chair (Messrs. Sheppard, Doliber, and Markoe) to revise the By-Laws of the College and Board of Trustees, and report at next meeting.

The following list of officers were elected: *President*, Mr. Henry Canning; *First Vice-President*, Mr. Edward S. Kelley; *Second Vice-President*, Mr. Wm. W. Bartlett; *Recording Secretary*, Mr. Wm. F. Sawyer; *Treasurer*, Mr. Samuel A. D. Sheppard; *Auditor*, Mr. Linus D. Drury; *Corresponding Secretary*, Mr. Charles C. Williams; *Trustees*, Messrs. Solomon Carter, F. H. Butler, Silas S. Bradford, Geo. F. Dinsmore, John D. Knowlton, E. Waldo Cutler, Henry K. Appleton, Edward E. Babb. The following gentlemen were appointed delegates to the American Pharmaceutical Association: Messrs. Benj F. Stacy, F. H Butler, S. A. D. Sheppard; Delegates to Convention of Colleges: Prof. G F. H. Markoe, S A. D. Sheppard, and Wm. W. Bartlett; Prof. B. F. Davenport elected Registrar, Mr. Thomas Doliber Trustee of Building Fund.

W. F. SAWYER,
Recording Secretary.

St. Louis College of Pharmacy.—At the meeting of the Board of Trustees held May 16th, 1882, the following professors were elected for the ensuing year: *Chemistry*, Charles O. Curtman, M.D.; *Materia Medica and Botany*, Otto A. Wall, M.D.; *Pharmacy*, James M. Good, Ph.G. The following *Committee on Examination* was appointed: *Chemistry*, H. E. Hoelke; *Materia Medica*, Charles Bang; *Pharmacy*, Charles Henna.

On the annual meeting of the Alumni Association of the St. Louis College of Pharmacy, the following officers were elected: *President*, J. W. Tomfohrde; *First Vice-President*, G. M. H. Goehring; *Second Vice-President*, Jno. P. Schoenthaler; *Executive Board.*—For three years, Adam Roth, Gust. Brandan. For two years, Ed Knobel, Hy. F. Hassebrock For one year, Jno. G. Goehring, Wm. H. Stubbermann. *Registrar*, Theo. Klipstein; *Corresponding Secretary*, F. G. Uhlich; *Recording Secretary*, F. T. Reichenbach; *Treasurer*, Chas. Gietner.

Albany College of Pharmacy.—At a meeting of the Faculty of the Albany College of Pharmacy, held July 8th, 1882, the following delegates were elected:

To the American Pharmaceutical Association: Archibald McClure, Esq., Alfred B. Huested, M.D., Louis Sautter, Esq., Profs. Willis G. Tucker, M.D., and Gustavus Michaelis, Ph.G.

To the Convention of Colleges of Pharmacy: Profs. Jacob S. Mosher, M.D., Willis G. Tucker, M.D., and Alfred B. Huested, M.D.

The next lecture term in the college opens on Monday, October 2d, with the prospect of a large class being in attendance.

Pharmaceutical Matters in Louisiana.—A correspondent in Louisiana favors us with the following notes relative to the progress made in pharmaceutical organization in that region.

"As a sign of the influence and good exercised by the organization of the Louisiana State Pharmaceutical Association, I take great pleasure to inform you that the druggists of New Orleans formed a local society under the name of 'The Pharmaceutists' and Druggists' Society of the Parish of Orleans,' having for its objects the furtherance and the progress of the science of pharmacy within the parish. The following were elected as officers: Alex. K. Finlay, *Pres.;* H. J. Bivet, *1st Vice-Pres.;* G. J. Mattingly, *2d Vice-Pres.;* W. B. Gill, *Rec. Sec.;* C. L Keppler, *Cor. Sec.;* Wm. Graner, *Treas.*

"Regular meetings will be held on the first Monday of each month, at 12 o'clock noon. About seventy pharmacists were participants in the organization.

"Our pharmacy act was introduced on the 2d of June in the Senate, and has not been brought up for action, but we have strong hopes that it will be passed, as every druggist in the State was furnished with a letter to be addressed to his representative, requesting him as a personal favor to vote for it."

Wisconsin Pharmaceutical Association.—The third annual meeting will convene at the Exposition Building, Oshkosh, on Tuesday, August 8th, at 10 o'clock A.M. Sessions will be held on the 8th, 9th, 10th, at 10 A.M. and 2 P.M., each day First-class accommodations have been secured for members and their ladies, as follows: Revere House, Tremont House, Seymour House, $2.00 per day; Commercial House, $1.50 per day; Fowler House, $1.25 per day.

Reduced rates rates on railroads as follows: Full fare to Oshkosh, return for one-fifth fare, on certificate of Local Secretary. Tickets holding good until Monday, August 14th, inclusive.

The Reception Committee will make their headquarters at the Revere House, where visitors are requested to report as early as possible, that they may register and be furnished with the necessary badges, tickets, and programme to be followed at the different sessions.

Exhibitors are requested to forward their exhibits on or before August 4th, charges prepaid, care of the Local Secretary, J. F. W. Schmidt, Oshkosh, accompanied with instructions as to their disposal.

There is every indication that the exhibition will be an important feature of the meeting, as the number of applications for space has already been very large.

Tuesday afternoon, address of welcome by Mayor Geo. W. Pratt. President's address by President F. Robinson.

Wednesday evening a reception and promenade concert at the Exposition Building. Thursday afternoon excursion on the lake to Island Park.

There is now every indication that this will be the largest meeting of the kind ever held in the State, and every effort will be made to make it pleasant and profitable.

All information as to exhibits, etc., should be made to the Local Secretary, J. F. W. Schmidt, Oshkosh.

Copies of By-Laws, Constitution, or Proceedings of 1881 can be obtained of the Permanent Secretary.

E. B. HEIMSTREET,
Janesville, Wis.

Railroad Rates.—Interesting to members of the American Pharmaceutical Association: Owing to combinations and pools of the different railroad corporations all over the United States and Canada, it has been impossible to get any special rates for members of the American Pharmaceutical Association meeting at Niagara Falls, in September next. Most of the railroads issue excursion tickets to Niagara at a very small reduction, which are available to everybody. Should the pools break, or any arrangement be made before the meeting, the committee will notify members by postal card.

NEW YORK, July 13th, 1882. T. J. MACMAHAN,
Committee on Railroads.

North Carolina Pharmaceutical Association.—The third annual meeting of the North Carolina Pharmaceutical Association will convene in the Opera House at Winston, N. C., Wednesday, August 9th, at 10 A.M.

Winston is an enterprising and healthful up-country town, in full view of the mountains. The climate is good, and the hotel accommodations excellent. Druggists will do well to avail themselves of this opportunity to visit the mountains and meet with members of their profession from different parts of the State.

The local secretary and business committee have made liberal arrangements for the comfort and pleasure of visiting members and their families. The meeting will no doubt be largely attended, and we hope you will make it convenient to be present.

The object of the Association commends it to the favorable consideration of every druggist in North Carolina. The present membership numbers one hundred and sixty-two, and includes many of the best pharmacists in the State. Every member of the profession should seek to enjoy the benefits and privileges of membership.

Arrangements have been made with all the railroad companies for reduced rates of transportation.

Blank applications for membership are ready for those who desire them. T. C. SMITH,
CHARLOTTE, N. C. *Secretary.*

Recent Discoveries of Amber in and near Berlin have been so promisingly large that predictions are made that the region will yet become a competitor of the amber fishing stations along the shores of the Baltic. Near what is called the port, a large deposit has been found, and in the Genthiner-strasse during a single week more than a hundred well-sized pieces were dug up. In the Landgrafenstrasse, in ancient alluvial soil, about 12 feet down, a systematic bed of amber was found. Not far from the city another discovery has also been made. Berlin is known to be built on sand, and considerable surprise is expressed that amber should be turn in it, and especially that its presence should have remained unknown until this late day.

PHARM. CALENDAR FOR AUGUST.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Tues. 1st.	Philadelphia Coll. Pharm.—Trustees' M.
	Maryland Coll. Pharm.—Trustees' M.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Thurs. 3d.	New York Coll. Pharm.—Trustees' Meet.
	Louisville Coll. Pharm.—Pharm. Meet.
	Massachusetts Coll. Pharm.—Trustees' M.
Frid. 4th.	American Chem. Soc.—Meet. at New York.
Mon. 7th.	Erie Co. Pharm. Asso.—An. Meet. at Buffalo.
Tues. 8th.	Wisconsin Pharm. Assoc. at Oshkosh (on 8th, 9th, and 10th).
	Pittsburgh Coll. Pharm.—Trust. Meet.
	Chicago Coll. Pharm.—Trust. Meet.
	Kings Co. Pharmaceutical Soc.—Meeting at Brooklyn.
	National Coll. Pharm.—Meet.
Wed. 9th.	North Carolina Pharm. Assoc.—Annual Meeting at Winston.
Thurs. 10th.	Newark Pharm. Asso.—Meet.
	Louisville Coll. Pharm.—Direct. Meet.
	Philadelphia Coll. Pharm.—Alumni Ph. M.
	Maryland Coll. Pharm.—Meet.
	New York German Apoth. Society.—Meet.
Tues. 15th.	St. Louis Coll. Pharm.—Trust. & Alumni M.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Tues. 22d.	Boston Druggists' Assoc.—Meet.
Thurs. 31st.	Kings Co. Board of Pharm.—M. at Brooklyn.